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COMMERCIAL CAR JOURNAL

THE MAGAZINE FOR FLEET OPERATORS

SEPTEMBER 1941

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June 28, 1941

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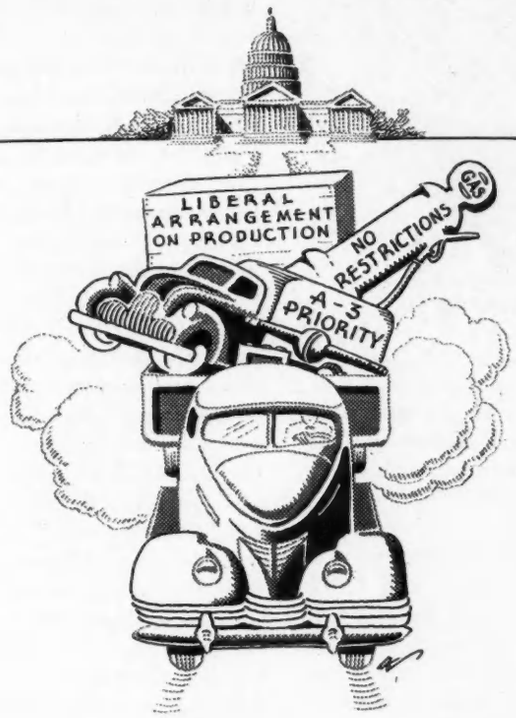
THE MAGAZINE FOR FLEET OPERATORS
Vol. LXII SEPTEMBER, 1941 No. 1



DEFENSE DECISIONS FAVOR TRUCKS

A-3 Priority on materials for trucks, trailers and parts; liberal arrangement on production and no restrictions in connection with eastern gas shortage make up month's Washington payload

by GEORGE T. HOOK
Editor, Commercial Car Journal

ALL the news affecting the truck industry that came out of Washington during the month of August was distinctly favorable. The news took the form of official decisions and official promises and gave manufacturers and users alike much cause for elation.

In the last issue we forecast the granting to the truck industry of an A-3 priority. It is possible now to say that the A-3 priority is a certainty. At the time of going to press it was an official promise made in a joint statement released by the Office of Production Management and the Office of Price Administration and Civilian Supply. The statement dealt primarily with curtailment of passenger car production, but in what seemed like an attempt to temper the bad news given the passenger car producers the statement included this paragraph:

"At the same time the Priorities Division of the OPM announced it is preparing a blanket preference rating order to aid truck manufacturers in obtaining scarce materials quickly. The order extends a preference rating of A-3, the same rating granted previously for freight cars, to deliveries of critical materials required for heavy motor trucks, medium motor trucks, truck trailers, public passenger buses and replacement parts for trucks and buses of similar types. This priorities assistance applies to trucks with a carrying capacity of 1½ tons or more."

It is a certainty that this official promise will have been officially fulfilled by the time this issue reaches readers. This prediction is made with confidence because the production plans that have been agreed upon date from Sept. 1.

COMMERCIAL CAR JOURNAL is informed that the preference rating of A-3 will apply to materials intended for medium trucks, meaning trucks with a manufacturer's rated capacity of 1½ tons; for heavy trucks, meaning trucks with a manufacturer's rated capacity over 1½ tons; for semi-trailers and full trailers with a rated capacity of 5 tons or over, and for replacement parts for all such vehicles.

At the moment of writing there was doubt that the priority order would specifically mention truck bodies and cabs and parts and accessories intended for such bodies and cabs. OPM has been made well aware by the Central Motor Transportation Committee, which represents the interests of truck users, that

DEFENSE DECISIONS FAVOR TRUCKS

a truck or trailer chassis without a body and cab is a useless unit of transportation. There are, however, something like 1200 body builders, large and small, local and national, not including the many fleets that build their own bodies. And OPM hesitates to issue this large group a blanket preference rating. It was considered likely that bodies would be included in the preference rating "by interpretation," that body builders would have to apply individually for a priority certificate if they were having difficulty in procuring critical materials, and that such applications would be considered upon their merits.

According to OPM the priorities assistance being granted to truck manufacturers is based upon indications that 1,189,000 trucks, approximately 200,000 more than the output during the model year ended July 31, will be required during the new model year that began Aug. 1. This estimate of truck requirements includes vehicles for the United States Army and Navy, for the lease-lend program, for export to Russia and other countries, and for vital domestic civilian transportation needs shown in a study by the Central Motor Transportation Committee, headed by Interstate Commerce Commissioner John L. Rogers.

It is understood that the CMTC's study showed that the domestic market would require a little more than 700,000 trucks during the model year period beginning Aug. 1. It should be emphasized that this is an estimate of domestic civilian needs and therefore, is exclusive of vehicles for export, for the military, for lease-lend, and of special commercial vehicles such as hearses, station wagons, fire apparatus, etc. This estimate of 700,000 for the 12-month period beginning Aug. 1, 1941, compares with a domestic registration of approximately 650,000 new trucks of all kinds during the corresponding period beginning Aug. 1, 1940.

On the basis of this domestic civilian requirement, COMMERCIAL CAR JOURNAL is informed that simultaneously with the issuance of the A-3 priority OPM will announce a liberal arrangement with regard to truck production for the three-month period beginning Sept. 1. Under the terms of this arrangement with truck manufacturers there will be absolutely no restriction on the production of trucks having a manufacturer's rated capacity in excess of 1½ tons. In other words, for the domestic civilian market manufacturers will be free to build as many such trucks as the market demands.

In the case of trucks with a rated capacity of 1½ tons, the permissible production for the three months beginning Sept. 1 will be held to 50 per cent of the six-month period beginning Jan. 1, 1941. This period established a new six-month production record for the truck industry, so the arrangement does not involve any restriction. It could be considered a restriction only in the event that production feel short of the demand. This is a remote possibility.

Production of trailers and replacement parts will correspond to the arrangement applying to 1½-ton trucks.

The statistically minded may be curious to know what this arrangement means in terms of unit production of trucks for the three months Sept. 1 to Nov. 30. No official figures are available, but from an entirely reliable source COMMERCIAL CAR JOURNAL learned that production of 1½-ton trucks should be in the neighborhood of 200,000. Production of trucks over 1½-ton capacity would be about 40,000 if they

---

CCJ QUIZ

by ROBERT F. BAHL

If you've been keeping up with the news lately, this quiz ought to be a "cinch" for you. In fact, you should come mighty close to scoring a 100 . . . counting 10 points for each correct answer. At least, see if you can make the passing grade of 70.

Correct Answers on Page 146

1.

You can't say you even glance through the newspapers if you are unable to tell which of these is "Oil Co-Ordinator" in the Defense Program—

a. Harold L. Ickes
b. Clarence A. Dykstra
c. Fiorello LaGuardia
d. Harry Hopkins

2.

One of these important bodies recently put itself on record by passing a resolution for the elimination of trade barriers between states. Can you name it?

a. United States Chamber of Commerce.
b. Council of State Governments.
c. Office of Price Administration and Civilian Supply.
d. U. S. Department of the Interior.

3.

Learning a lesson from World War I, when the A.E.F. was balked when any one of its 216 types of trucks broke down, the Army is now standardizing on—

a. 4 trucks
b. 8 trucks
c. 16 trucks
d. 32 trucks

4.

Find the villain. Which of these is responsible for the present shortage of oil in the eastern part of the nation?

a. A strike of workers in the Texas oil fields.
b. Creation of a 1½ year reserve stock by the U. S. Government.
c. Diversion of tankers in the Gulf-East Coast service to other uses.
d. Vast shipments to England under the Lend-Lease Program.

5.

With deliveries playing such an important part in speeding up the Defense Program, it is interesting to note how many communities are without rail facilities and must depend solely on truck service. These communities total in round numbers—

a. 5,000
b. 25,000
c. 35,000
d. 50,000

were made on the same basis as the first six months of the year. However, there may be an increase in the production of such trucks.

(This production arrangement, it should be remembered, does not apply to the production of trucks ordered for the Army and Navy, for lease-lend and for export. Such production will be in addition to that embraced by the arrangement and will not be limited.)

About 15 days before the three-month production period ends, the civilian production arrangement will come up for review by OPM and plans made for the next period on the basis of anticipated conditions.

The only restrictions which fleet operators and other truck users may feel are those likely to prevail in the production of trucks below a capacity of 1½ tons and in the production of passenger cars.

For the months of August, September, October and November passenger-car production will be curtailed 26½ per cent, and progressively more in subsequent months, with the expectancy of a 50 per cent curtailment for the model year ending July 31, 1942. That curtailment has the authority of OPM and OPACS back of it.

It had been expected that the OPM order dealing with passenger cars would apply the same restrictions to commercial cars and light trucks below a capacity of 1½ tons. Such, however, was not the case. The order made no mention of light trucks. Nor had the matter been clarified up to the moment of this writing. A belief existed that the automotive industry would be free to produce all the trucks under 1½ tons for which it can obtain materials and for which facilities are available after demand for the heavier models is met. Neither passenger cars nor the lighter trucks, it should be borne in mind, will enjoy the A-3 priority on materials accorded to trucks of 1½ tons and over.

The threatened gasoline shortage along the eastern seaboard also resulted in a decision favorable to truck users. The extent of the shortage was the subject of conflicting and confusing interpretations, which may terminate in a Congressional investigation, but truck users were above the controversy. Washington authorities authorized filling station operators and refiners to supply truck users with all the gasoline they needed, even during the period from 7 P.M. to 7 A.M. when filling stations are closed to passenger car users.

This priority on gasoline will undoubtedly prevail throughout the shortage period, although truck users will be urged to curtail consumption by effecting economies through individual and cooperative means.

6.

Which of these men heads the automotive section of the OPM under its new "streamlined" section set-up?

a. Ralph Budd
b. Burton K. Wheeler
c. Sidney Weinberg
d. James S. Adams

7.

If you had an eye toward economy, which of these methods would you employ to bring oil from East Texas to New York?

a. Tanker
b. Pipeline
c. Rail

8.

Can you tell us how many states have liberalized length and weight restrictions on motor trucks during the past legislative session?

a. Three
b. Five
c. Eight
d. Fifteen

9.

A 50 per cent curtailment in the production of automobiles has been asked, but as far as trucks are concerned Price Control Administrator Leon Henderson has said that:

a. No cut is anticipated for trucks having capacities over one ton.
b. A similar 50 per cent reduction is necessary in truck production.
c. Truck production must be increased.
d. There must be a curtailment of 33 1/3 per cent in the production of all trucks not directly used for national defense.

10.

Do you know how the number of trucks available today compares with the number available when we entered hostilities in 1917. The ratio is:

a. 3 to 1
b. 7 to 1
c. 14 to 1
d. 144 to 1

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Lowe Brothers Color Stylizer

By means of transparent masks over generous sized color samples the "Stylizer" makes it easy to visualize hundreds of different color combinations on popular types of trucks. Included is a Harmony Chart which rates and recommends color combinations for visibility and attention value. Check "A" on the postcard.

Bearing Manual

"Getting The Most From Engine Bearings" is the title of a booklet by Clawson and Bals, Inc., which describes it very well. It is an engine bearing maintenance manual which describes and illustrates bearing troubles, their cause and cure. Check "B" on the postcard.

Oakite Cleaning Booklet

Packed with many tips for turning out repair and overhaul jobs faster and easier, this 36-page booklet by Oakite Products, Inc., describes several new materials for cleaning iron and steel parts with hot and cold solutions; reconditioning cooling systems; deodorization and germicidal treatment of truck interiors as well as floor cleaning and paint stripping. Check "C" on the postcard.

Tank Books

The Butler Mfg. Co. has issued two booklets, one on truck tanks and one treating trailer tanks. All types of tanks and fittings are described and illustrated. Check "D" on the postcard.

Dole Catalog

The new Dole Refrigerating Co. catalog No. 22 has a complete section devoted to truck and trailer refrigeration and the application of Dole Vacuum Cold Plates to highway transportation units. There are many other applications described, most of which would be interesting to fleet operators. Check "E" on the postcard.

EIGHTEEN STATES EASE THEIR RESTRICTIONS ON MOTOR TRUCKS

A substantial number of modifications favorable to trucks are in line with recommendations of highway officials to promote size and weight uniformity

NOTE—Because of numerous changes in state size and weight regulations the table published annually in the April issue of COMMERCIAL CAR JOURNAL has been revised and brought up to date. It is published on pages 28 and 29 of this issue.

MANY changes favorable to motor trucks were enacted into laws by 18 states during the 1941 legislative year. A substantial number of these changes were in line with the recommendations of organized highway officials to effect uniformity of size and weight limits.

Particularly noteworthy was the removal of highway bottlenecks, caused by unduly restrictive limits, in Texas and Tennessee. The former Texas 7000-lb. load limit was abolished in favor of scientific standards, using the formula of 700 (L plus 40) with a maximum gross of 38,000 lb. The Tennessee gross weight limit was raised from 24,000 to 30,000 lb.

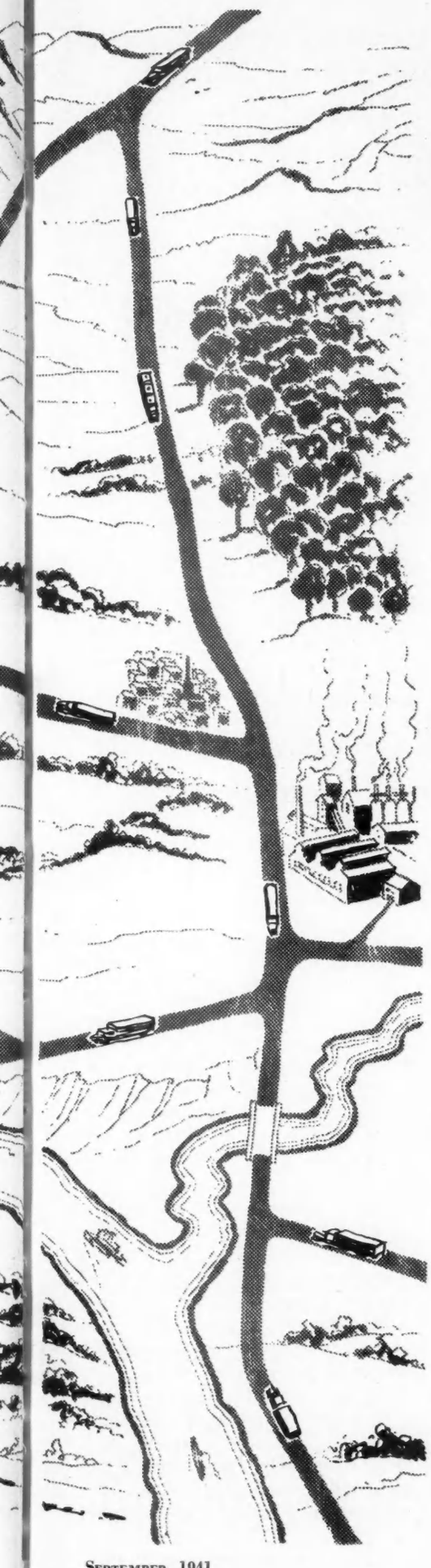
Statutes providing new weight limits were also adopted in California, Florida, Georgia, Indiana, Iowa, Maryland, New Hampshire, North Dakota, Ohio, Oregon, Vermont and Washington. These laws generally use a maximum gross axle weight of 18,000 lb. as a standard. The so-called "bridge formula" of W equals X (L plus 40) is utilized in the new statutes in California, Georgia, Indiana, Maryland and Washington. The new Vermont law substitutes 600 lb. per inch of tire width in lieu of a 16,000-lb. axle limit.

Revisions in maximum length limits were made in Arizona, Georgia, Indiana, Maryland, Massachusetts, North Dakota, Ohio and Wisconsin. Delaware increased the maximum height permitted to 12½ feet.

A South Dakota law permits overlength and over-weight operations in order to furnish transportation facilities to communities where service has been abandoned by the railroads.

Increases in Illinois, Missouri and Pennsylvania were passed by the Legislatures but were vetoed by the Governors. Although the Illinois Governor vetoed a specific increase in

(TURN TO PAGE 139, PLEASE)



I. C. C. ASKS CONGRESS TO REGULATE TRUCK SIZES & WEIGHTS

Recommends that cases where state regulations impede interstate traffic be considered individually; does not want specific weight standards prescribed

CONGRESS now has before it a recommendation of the Interstate Commerce Commission that the sizes and weights of motor trucks be subjected to Federal regulation in cases where state limitations impede the free flow of interstate commerce.

The recommendation, filed on August 14, was contained in the long-awaited report of the Commission on the need for Federal size and weight regulation which it was authorized to make by the Transportation Act of 1940.

The most significant conclusion in the report is that "national uniformity of size and weight standards is impracticable." From acceptance of that premise sprouts the I.C.C. recommendation that "Congress should enter this field only to the extent that proves necessary under the circumstances of particular situations."

Technically a report to Congress, the document is in reality a request by the Interstate Commerce Commission that it be granted authority to supersede state limitations where it finds that such limitations are at variance with "the declared standard of Congress that commerce be not unreasonably burdened." The grant of such authority would be in the form of an amendment to the Transportation Act of 1940. It remains to be seen what action Congress will take. The I.C.C. report is now being printed.

When it does act, Congress will not—if it follows the advice of the I.C.C.—prescribe specific size and weight standards. The Commission pointedly asserted that Congress should refrain from "detailed statutory expression of precise standards" in favor of "administrative determination in the light of the facts of given situations."

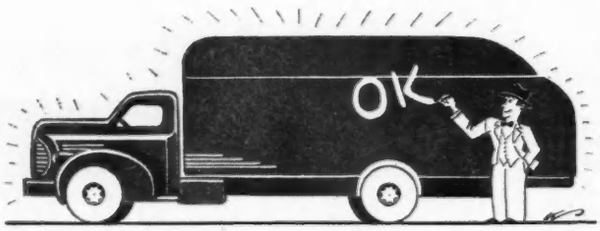
Administrative procedure would be as follows:

1. The filing of a complaint before the Commission by a responsible party.

2. The obtaining by the Commission of technical information from the Public Roads Administration and

(TURN TO PAGE 143, PLEASE)

MEMO ON MATERIALS FOR TRUCKS



Cherished reputations are at stake and manufacturers assure fleetmen that use of alternate materials is actually no cause for alarm

by

JOSEPH GESCHELIN

CCJ Detroit Technical Editor

WATCHING the ever changing materials situation with furrowed brow, fleetmen have become confused (and not unjustifiably so) by the wealth of uninformed discussion in newspapers and periodicals. There has been wanton reference to "ersatz" materials—to substitutions of inferior materials—to all manner of frantic efforts to circumvent the shortages of high grade materials shunted to the uses of national defense.

Small wonder that some fleetmen have become concerned as to the quality and durability of the heavy duty transportation equipment that will be built at the turn of the year under existing conditions.

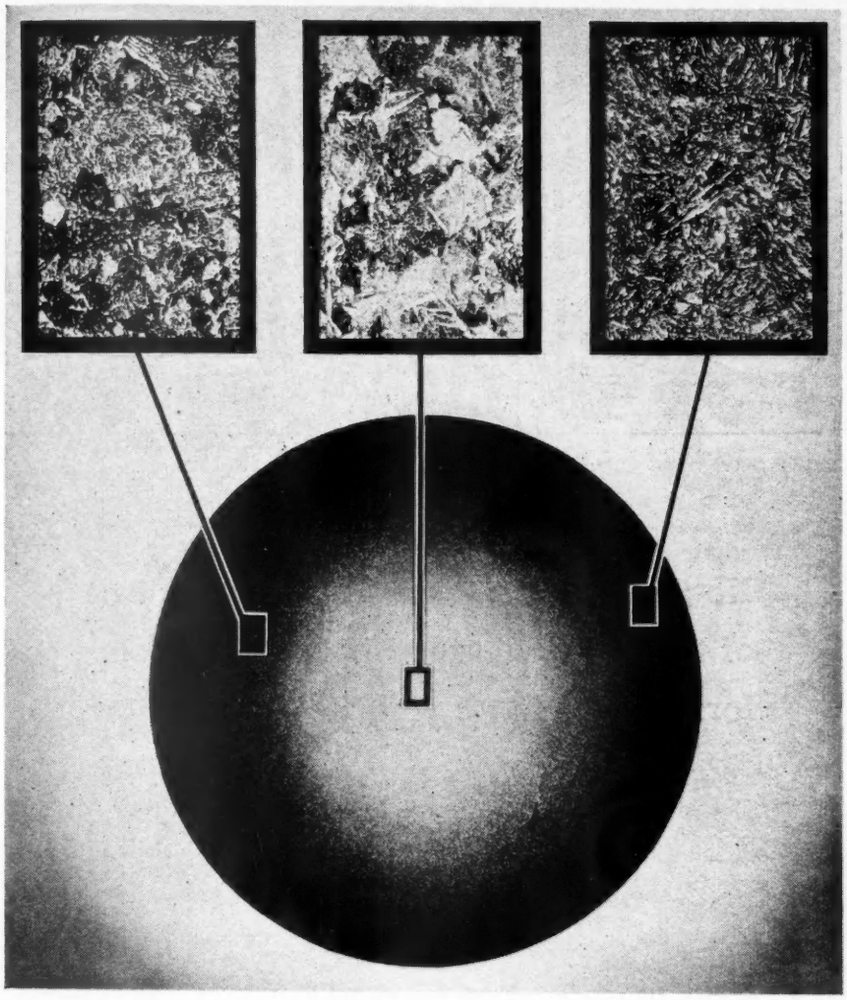
This is intended to tell our friends of the vast transportation industry that nothing in the cards, as they are being dealt now by the experts, indicates any danger of an inferior product. Quite to the contrary, a recent canvass of well-informed technicians in the motor truck industry proves that engineers and metallurgists have been wide awake, have taken steps to make sure that whatever materials they employ in the near future will have equal durability and equivalent strength.

True enough in some cases the alternate materials may require special heat treatment, may demand changes in metal cutting procedure, may even increase manufacturing cost to some extent. But so far as the operator is concerned there is every indication that the resulting vehicle will be of the same order of performance and life expectancy.

What is the real picture. As far back as you can look, the reputable truck builder has been using the finest materials available for highly stressed parts. More recently the use of fine alloy steels has made it possible to reduce the size and weight of component parts and assemblies—producing more power from smaller engines, transferring power to the wheels through small transmissions and axles.

Under normal circumstances the object of the designer is to select such materials as will give the greatest strength and durability when combined with ease of fabrication. That is true engineering economy. It has been responsible for the amazing development of fine alloy steels.

On the other hand there are scores of fine steels which, under the right conditions, are quite acceptable and may be used interchangeably for the more widely used alloy steels. You will find a rich variety of steels of the



At left: Cross-section of new Axaloy steel shaft, Timken Axle's answer to the alternate material problem, showing microstructure at three points—desired hardness at the outside and a decreasing hardness toward the center with fine grain structure throughout

molybdenum series, the chromium family, manganese and manganese-silicon steels, and the many varieties of the low-alloy steels. When the engineers and metallurgists get their heads together, it is perfectly feasible to select a new material with comparable hardenability, resistance to fatigue and physical strength, so that parts produced from this material will give the same service as before without any change in size or shape. As a matter of fact that is precisely what has been done.

Naturally the specialized materials are not truly interchangeable in every respect. An alternate material may easily require its own unique heat treatment. Or it may demand a different machining procedure with a consequent increase in prime manufacturing cost. It must be recalled in this connection that one of the important attributes of nickel bearing steels is that of good machinability. However, so far as the user is concerned these are special considerations with which he is not concerned, except in so far as they explain the reason for a possible increase in product cost.

What does concern the fleetman is that the use of alternate materials need not affect the serviceability of the vehicle that he buys.

Nevertheless, we can't dodge the fact that certain spots defy ready substitution. One of these is the exhaust valve. Years of experience have proved that the high-grade nickel-alloy steel is by all odds the only material that will withstand the extremely high temperatures, the corrosion of waste gases, the abrasion, and the other things that raise Cain around the exhaust port. If nickel were unavailable for this purpose, it is quite likely that the life of exhaust valves would be impaired.

Best opinion we have had on this score is that nickel will continue to be available for valve steels. For one thing, the industry has done such a splendid job of cooperation in reducing the use of nickel that the OPM can readily agree to free the relatively small amount of nickel required for this purpose. For another thing, OPM recognizes the transportation industry as vital to national defense and, consequently, is not placing insuperable barriers in its path.

This is illustrated by another case. There is some speculation as to the possible shift to plain carbon steels, specially treated to effect reasonable hardenability. However, the physical properties of such steels are so much lower than those of even the low-alloy steels as to make it necessary to increase the size of parts. That is more serious than the resulting increase in dead weight. In any of the major units such as the transmission or the axle it means an increase in shaft centers and in length, an increase in bearing diameters, etc. It involves major changes in tooling and in fixtures; while in mass production it would even affect the machine tools now in use.

From the standpoint of the emergency the cure would be more serious than the disease. Because of this, well-informed people are confident that suitable alternate materials will continue to be made available wherever the problem has been thoroughly analyzed and presented to the proper authorities.

Looking at the picture realistically, isn't it possible that some of us have lost sight of the fact that the competition between materials and processes is a dynamic force that is with us all the time. It is by no means novel to find one material replaced by another under the right circum-

(Turn to Page 58, Please)

VALVE springs are one of the cheapest parts of the engine and still they are one of the most neglected parts. The neglect of these cheap parts has expensive results. Presumably the neglect is due to lack of thought on the part of the average mechanic and it may be in some part due to lack of a measuring device for determining the condition of valve springs.

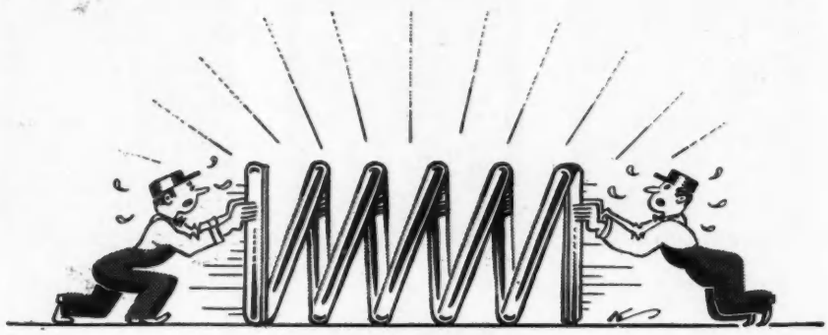
One of the obvious results of worn out valve springs is valve failures, which are too frequently blamed on the valves themselves. Many mechanics who never replace valve springs wonder why the valve job they do never lasts as long as the original one. More often than not this is due to the springs.

Less obvious is the loss of power or fuel economy when the valve springs weaken. Accompanying the increase in power in engines is an increase in compression ratio and usually an increase in temperature at the valve. The newer engines are more critical of leaks at the valve guides and the valves are more inclined to stick. Thus valve springs of correct pressure are more important than ever.

It might be concluded from this that if a spring of correct pressure was good, a spring of greater pressure would be better. It is not so simple as that. While the stiffer spring might give some desirable results, it would put a greater load on the valve, valve seat, valve lifter or tappet and even the camshaft. Increasing the valve spring pressure to an amount greater than that specified by the engine maker might lead to even shorter valve life. It would cause the valve to pound down the seat in the block and it might cause it to pull the head right off the stem and it would accelerate the wear on the lifting mechanism.

When the valve springs weaken short life from exhaust valves may be expected. No exhaust valve that fails to close promptly and completely will last long in a modern engine. Not only will the actual valve failures harass the engine with weak valve springs but sticky valves will occur from time to time.

Thus it seems that the only way to get maximum valve life and engine performance is to keep the valves at the specified pressure. It is possible to use spacers above the springs in



Neglect of these cheap parts is one of the chief causes of poor engine performance. Here's what to do and how

by HENRY JENNINGS
Technical Editor, Commercial Car Journal

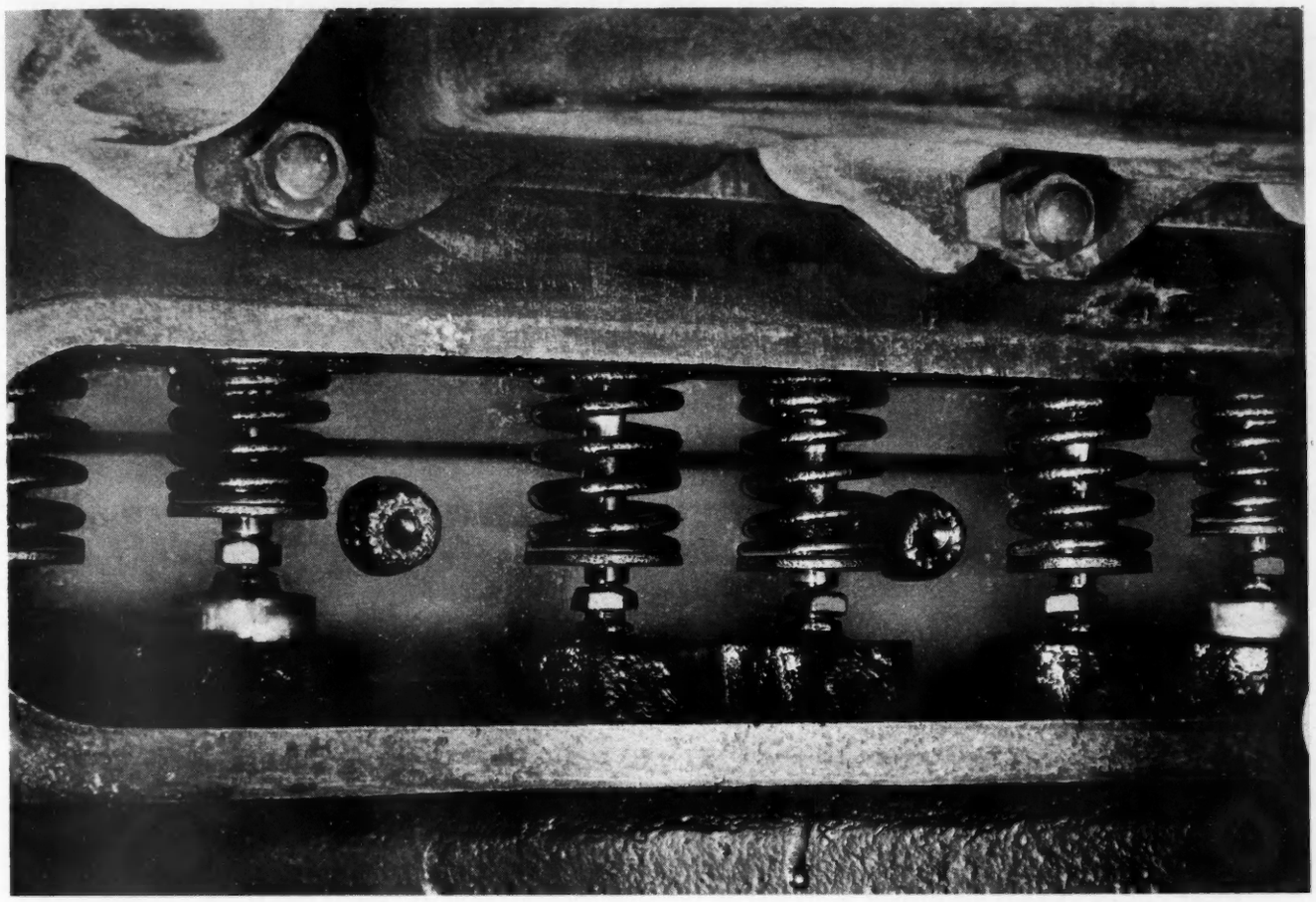
VALVE SPRINGS

cases where the springs have weakened but these spacers have to be designed for every type of engine and they might break or become dislodged causing damage. Since the springs cost so little it does not seem wise to play around with spacing.

There are two ways to handle valve springs. One is to throw all of the springs away every time a valve job is done. By the time an engine needs a valve job it probably needs new springs. Experience shows that springs weaken relatively fast for the first 10,000 miles of operation and then level off and weaken more slowly. Not very many valve jobs will be done at a time when there is much salvage to the springs.

The other way and it seems feasible only when there are a great many springs to check, is to obtain a valve spring scale which will weigh pressure and at the same time measure the length of the spring. Then the condition of the spring may be checked against specifications.

The factory specification for springs of various engines are given in the table. Some of them give a fairly wide range of pressure that is acceptable. The pressure was determined presupposing that the effective length of the spring was the same as a new valve. It may pay to be even more fussy about the springs than the recommendations indicate because repeated valve refacing lengthens the spring when the valve is closed since in removing material from the valve head the whole stem is lengthened. Wear on the bottom of the valve key slot can add a not inconsiderable amount to the effective length of the spring when the valve is either open or closed.



AND √TROUBLE

RECOMMENDED VALVE SPRING PRESSURES BY TRUCK AND ENGINE MAKES

Trucks	Year	VALVE SPRINGS — Valve Open: Pressure (Ave.) Pounds	Valve Open: Length Inches	Valve Closed: Pressure (Ave.) Pounds	Valve Closed: Length Inches
AUTOCAR					
All models having the 315, 331, 358, 377, 404, 408, 447, 453 and 501 cu. in. engine		110	2 1/8	76	2 1/2
C-10, C-20, U-10, U-20		58	1.594	43	1.920
DC-10, DC-20 O.		55	1.406	31	1.781
I.		37	1.281	19	1.656
C-9044 O.		84	3 5/16	47	3 7/32
I.		45	2 13/16	27	3 1/4
DC-100-T, DC-100-D, DC-10044, DC-10062, DC-10064		136	2 3/16	87	2 11/16
BROCKWAY					
78	1939-1941	98-104	1 3/8	42.5-47.5	1 23/32
83, 88, 92, 94 1st	1939-1940	105-111	1 17/32	43.6-47.6	2 3/16
2nd	1939-1941	111-118	1.521	53-59	1 7/8
112, 128, 146, 147	1940-1941	111-118	1.521	53-59	1 7/8
152, 153, 154, 162, 156, 166 O.	1940-1941	102-110	1.521	45-51	1 7/8
I.	1940-1941	28-32	1 11/64	11.3-14.3	1 41/32
170, 195, 175, 220, 240, 260 O.	1939-1941	105-115	1 7/8	54.7-58.7	2 1/4
I.	1939-1941	47-53	1 23/32	20.4-24.4	2 7/32
96, 130, 125X, 145, 150X4, 150X5, O.	Up to 1940	90-98	1 37/32	43.5-49.5	2 1/4
160X, 165X I.	Inclusive	31-35	1 3/4	16.6-19.6	2 3/32
CHEVROLET					
All models	1939-1940	127	1 1/2	52	1 13/16
All models	1941	128	1 1/2	55	1 13/16
CORBITT					
13B, F-12, 18SB2, 18SB4, 1st	1939-1940	105-111	1 37/32	43.6-47.6	2 3/16
18SB6 2nd	1940-1941	111 118	1.521	53-59	1 7/8
17B, 14BT, 17BT, F-14, F-19, 25SB4, 25SB2, 25SB6	1940-1941	111-118	1.521	53-59	1 7/8
21B, 26D, 18BT, F-18, 35SB4, O.		90-98	1 37/32	43.5-49.5	2 1/4
35SB2 I.		31-35	1 3/4	16.6-19.6	2 3/32
22BT, 27BT, F-23, F-27, F-35, O.	1939-1941	105-115	1 7/8	54.7-58.7	2 1/4
40SB2, 40SB4, 40SD6 I.	1939-1941	47-53	1 23/32	20.4-24.4	2 7/32
50SD6, 54SD6 O.		84	3 5/16	47	3 7/32
I.		45	2 13/16	27	3 1/4
D18BT		113	2	69	2 23/32
D27B6T		136	2 3/16	87	2 11/16

ABBREVIATIONS: I.—Inner O.—Outer

(CONTINUED ON NEXT PAGE)

√√VALVE SPRINGS AND √TROUBLE (Continued)

RECOMMENDED VALVE SPRING PRESSURES

	Year	VALVE SPRINGS			
		Valve Open		Valve Closed	
		Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
DIAMOND T					
404, 404SC, 404C, 406, 509, 509SC, 509C, 612, 612SC, 612C, 614, 614SC, 614C		58	1.594	43	1.920
702, 702C, 805, 805C, 806, 806C, 900		102	2 3/32	50	2 11/64
DODGE					
TC, TD, VC, VD	1938-1940	80	1 7/16	36	1 3/4
TE, TF, TG, TH	1939	105	1 33/64	42 1/2	1 3/4
TL, TK, RO, RP, VL, VK, WL, WK	1939-1941	94	2 3/4	57 1/2	3 1/16
VF, VM, VG, VH, VR, VS, WC, WD, WF, WFM, WG, WH, WGM, WHM	1940-1941	111	1 3/8	42 1/2	1 3/4
FEDERAL					
8	1940-1941	37	1 3/32	19	1 11/64
15, 18, 20, 25, 29	1939-1941	52	1 5/16	31	1 11/64
40, 50, 35, 45, 55	1939-1941	60 1/2	2 1/16	47	2 1/16
C7, C8, 63	1939-1941	94	2 3/64	59	2 13/64
62 O.	1939-1941	50	1 47/64	22 1/2	2 1/32
62 I.	1939-1941	110	1 7/8	56 3/4	2 1/4
FORD					
60	1939-1940	48-52	1.788	26-30	2.05
85, 95, 30	1940-1941	76-80	1.827	37-40	2.13
F. W. D.					
HS, T26, HA		101-119	1 3/4	56-66	2 1/8
HG, HR, HM, HH6, CUA, CU, T32		93-109	1 31/64	59-69	2 11/64
SUA, SU, YU, MJ5, MJ6, T40		89-99	2 23/64	54 64	2 45/64
M7, T45		105-115	3 11/32	65-75	3 33/64
GENERAL MOTORS TRUCK					
AC & CC-100, 150, 250, 300, 350, 400, 450; ACS, CCS & CF-300, 350, 400 & 450; ACT, CCT, ACW, CCW, AFT, CFT, AFW & CFW-250 & 400; AF-310, 260, 410 & 460; ACK, CCK, ACKW & CCKW-350; ACV & CCV-100; AF & AFP-240	1939-1941	130	1.495	55.5	1.821
AC, ACR, AF & AFR-520; AC & AF-500, 550, 600 & 650; ACT & AFT-500 & 600; ACW & AFW-600	1939-1941	100	1 41/64	54	1 33/64
AC, ACR, AF & AFR-620; AC, AF & AY-700, 800 & 850; ACT, ACW, AFT & AFW-700; AC, ACR, AF & AFR-720 & 750; ACX-870 & 890; AC-770	1939-1941	108	1 27/64	54	1 33/64
GRAMM					
11A, 21A, 31A, 41A		41	1 3/8	17	1 11/32
		37	1.281	19	1.656
46A, 56A, 71A, 76A, 86A		58	1.594	43	1.920
96A		102	2 3/32	50	2 11/64
D46A, D56A, D71A O.		55	1.406	31	1.781
D46A, D56A, D71A I.		37	1.281	19	1.656
GF O.		84	3 5/16	47	3 1/32
GF I.		45	2 13/16	27	3 1/4
HUG					
19W, 23W, 85W, 83W	1939-1941	110-119	1 3/4	61-66	2 1/8
87W, 42W, 87W6	1939-1941	101-109	1 31/64	64-69	2 11/64
92U, 43W, 44-4, 45-4	1939-1941	94-99	2 3/64	59-64	2 13/64
98, 99, 99S	1939-1941	110-115	3 11/32	70-75	3 33/64
INTERNATIONAL HARVESTER					
D2, D15, D30, D300, K1, K2, K3, K4, K5	1937-1941	85	1 13/32	47	2 1/4
D35, D40, D400, K6, K7	1937-1941	80	1.707	55	2
D50, D500, D60, D70, D700, K8, K10, K11 O.	1937-1941	90	1 25/32	40	2 3/32
D50, D500, D60, D70, D700, K8, K10, K11 I.	1937-1941	45	1 13/32	20	1 11/32
A7, A8, AR626F O.	1937-1941	140	2 1/16	61	2 1/2
A7, A8, AR626F I.	1937-1941	79	1 33/64	36	2 3/32
KENWORTH					
505, 506, 507, 508, 509, 514, 515, 516, 510, 511, 512, 519, 520, 521, 522, 523, 524, 548, 549, 550, 552		136	2 3/16	87	2 11/64
543, 544, 545, 546		113	2	69	2 13/32
513, 536, 537, 538, 551		58	1.594	43	1.920
553, 554, 555, 556		64	2 1/16	50	2 5/64
MARMON-HERRINGTON					
J-5, J-6, JJ-5, JJ-6, LD-5, LLD-5, OT-4, OOT-4	1941	76-90	1.827	37-40	2.13
DSD-100, DSD-200, DSD-300	1941	58	1.594	43	1.920
DSD-400, DSD-500, DSD-550, LSD-550DR, DSD-600, DSD-700, DSD-800	1941	102	2 3/32	50	2 11/64
DSD-900, DSD-1000 O.	1941	84	3 5/16	47	3 1/32
DSD-900, DSD-1000 I.	1941	45	2 11/16	27	3 1/4
OSHKOSH					
JCB, JDS, W-100, W-200	1939-1941	58.7	1.594	43	1.920
W-300, W-400, W-500, W-600, W-700, W-800	1939-1941	102	2 3/32	50	2 11/64
BG3, GD O.	1939-1941	84	3 5/16	47	3 1/32
BG3, GD I.	1939-1941	45	2 11/16	27	3 1/4
STERLING (See Cummins & Waukesha Listing)					
STUDEBAKER					
J5-K5, J10-K10, J15-K15, M16	1937-1941	125-135	1 3/4	57	2 3/32
J20-K20, J25-K25	1937-1940	75-80	1 13/32	41-45	1 51/64
J30-K30	1937-1940	80-85	2 23/64	45-50	2 5/64
M5-M15	1941	90-94	1 7/16	37-41	1 3/4

	Year	VALVE SPRINGS			
		Valve Open		Valve Closed	
		Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
WALTER					
FN		64	2 1/16	50	2 5/64
FM, FKM, FCK, FC Exh.		87	2 13/32	52	2 29/64
FM, FKM, FCK, FC Int.		84	2 3/16	52	2 29/64
FB, FBR		140	3 1/4	100	3 5/16
FXB O.		84	3 5/16	47	3 1/32
FXB I.		45	2 11/16	27	3 1/4
ADK O.		48	1.449	27	1.844
ADK I.		30	1.355	17	1.750
ADB, ADV		136	2 1/16	87	2 11/64
WHITE					
706, 708, 710, 718, ,750, 810, 818, 822, 850	1939-1940	135	1 7/8	96	2 1/4
700, 704, 805, 904, WA-14, WA-18, WA-20, WA-22, WA-26, WA-34, WA-114, WA-118, WA-120, WA-122, WA-126, WA-134, 782	1939-1941	121	1 51/64	82	2 13/64
WILLYS					
38, 48, 440	1938-1940	85.5	1 11/16	46	2 1/4

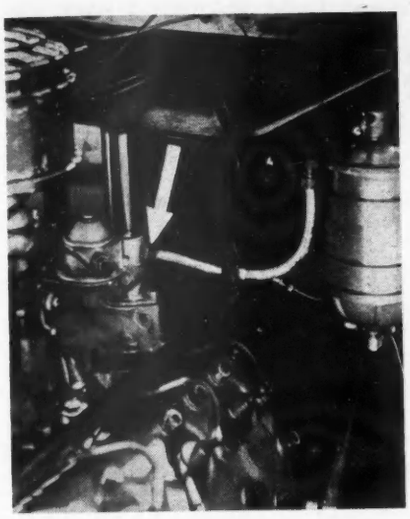
Engines

CONTINENTAL					
A6244 1st	1939-1940	105-111	1 37/64	43.6-47.6	2 3/16
A6244 2nd	1940-1941	111-118	1.521	53-59	1 5/8
B6371-B6405 O.	1940-1941	102-110	1.521	45-51	1 7/8
B6371-B6405 I.	1940-1941	28-32	1 11/32	11.3-14.3	1 11/32
E600, E601, E602, E603 O.		90-98	1 47/64	43.5-49.5	2 1/4
E600, E601, E602, E603 I.		31-35	1 3/4	16.6-19.6	2 3/16
F4124-F4140-F4162	1939-1941	78-86	1 27/64	31-37	1 41/64
F6170-F6199-F6209-F6218	1939-1941	98-104	1 3/4	42.5-47.5	1 53/64
M6271-M6290-M6330	1940-1941	111-118	1.521	53-59	1 5/8
20R, 21R, 22R O.	1939-1941	105-115	1 7/8	54.7-58.7	2 1/4
20R, 21R, 22R I.		47-53	1 13/32	20.4-24.4	2 3/32
CUMMINS					
A		113	2	69	2 13/32
H		136	2 3/16	87	2 11/32
K, KO, L, VL		238	2 5/8	110	3 5/16
HERCULES					
BX-ZX		35	1 3/64	22	1 1/8
NX-IX-3-IX-5		42	1 3/16	21	1 1/16
OO-JX		58	1.594	43	1.920
K-L-G-E		73	3 1/16		3 3/16
TX		100	3 1/16		3 3/16
QX		41	1 3/16	17	1 3/32
		37	1.281	19	1.656
QX-WX-WXL-YX-RX-RXL		102	2 3/32	50	2 11/64
HX O.		84	3 5/16	47	3 1/32
HX I.		45	2 11/16	27	3 1/4
DIX-DOO-DXJ O.		37	1.281	19	1.656
DIX-DOO-DXJ I.		55	1.406	31	1.781
DRX O.		48	1.449	27	1.844
DRX I.		20	1.355	17	1.750
DHX-DFX O.		57	2 1/4	32	3 1/32
DHX-DFX I.		94	2 3/32	55	3 1/32
WAUKESHA					
ICK		24	1 1/2	16	1 3/16
FCS, FC		66	1 5/8	36	1 13/32
XAH		68	1 5/8	56	1 7/8
		71	1 3/4	56	1 7/8
XBKH Exh. O.		95	1 23/32	43	2 1/32
XBKH Exh. I.		51	1 1/2	28	1 7/8
XBKH Int. O.		89	1 27/32	35	2 3/32
XBKH Int. I.		48	1 23/32	24	1 19/32
130HS, 130HL Exh. O.		55	1 7/16	26	1 13/32
130GS, 130GL Exh. I.		100	1 13/16	39	2 1/16
130GS, 130GL Int. O.		55	1 7/16	26	1 13/32
130GS, 130GL Int. I.		100	1 13/16	39	2 1/16
VIM, VIK, VIS, VIL		53	1 23/32	38	2 5/16
VBKH Exh. O.		55	1 43/64	32	1 13/32
VBKH Exh. I.		51	1 25/32	25	1 13/32
VBKH Int. O.		51	1 13/32	28	1 7/16
VBKH Int. I.		33	1 13/32	22	1 11/32
VRZ, VRZG, VRZH O.		72	1 5/8	36	1 3/4
VRZ, VRZG, VRZH I.		33	1 13/32	22	1 13/32
CHK, CHS		78	2 1/16	54	2 1/2
6BL, 6BK, 6BM, 6BZ		82	1 3/4	48	2 1/8
6BKH Exh. O.		91	1 3/4	39	2 1/8
6BKH Exh. I.		49	1 13/32	26	1 13/32
6BKH Int. O.		96	1 53/64	35	2 3/32
6BKH Int. I.		53	1 1/2	24	1 19/32
6MK, 6MZ, 6MKR, 6MZR		64	2 1/16	50	2 5/64
140GS, 140GK, 140HS, 140HK O.		75	1 51/64	20	2 3/16
140GS, 140GK, 140HS, 140HK I.		55	1 7/16	26	1 13/32
6SRLR, 6SRKR		87	2 3/32	52	2 13/32
		84	2 1/16	52	2 13/32
145GS, 145GK, 145HS, 145HK		158	2 5/8	67	2 11/16
		100	2 1/16	42	2 3/32
6GAK, 6GAL		140	2 1/16	61	2 1/2
		79	1 53/64	36	2 1/32
6RBR		140	3 1/4	100	3 5/8

ABBREVIATIONS: I.—Inner O.—Outer Int.—Intake Exh.—Exhaust

SHOP HINTS

FROM FLEET SHOPS



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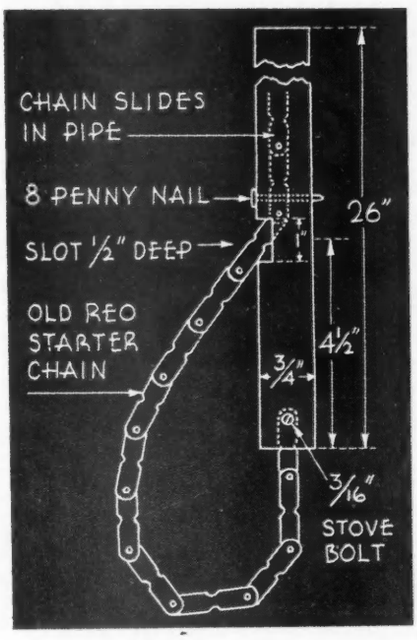


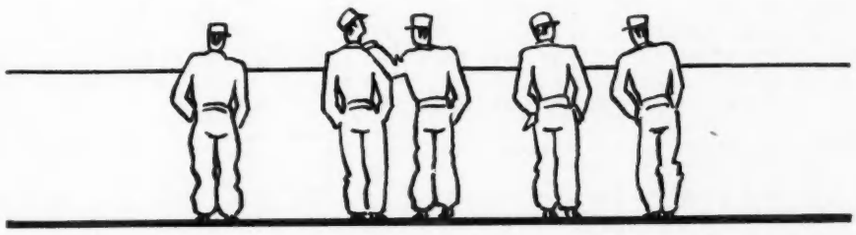
3

National Defense means that trucks will have to work harder than ever. They will have to spend more time on the road and less in the shop. Therefore efficient maintenance is more important than ever. Even parts may be hard to get promptly and certainly they will be more expensive. Skilled mechanics will be scarce. Altogether it means that Shop Hints are more valuable than ever before.

Any idea that will save mechanical labor or salvage some part of a fleet operator's equipment will be eagerly used by fleet operators. Shop Hints not only help other fleet operators but they are a contribution to National Defense since they help keep trucks working when they are most needed.

Commecial Car Journal will see to it that the author or originator of a Shop Hint does not go unrewarded. He will be paid $5 for every Shop Hint accepted and there is no limit to the number that Commercial Car Journal will accept.

A rough drawing or photograph is sufficient to illustrate the idea. Commercial Car Journal artists make the illustration ready for publication. All you have to do is make us understand what you mean. Send in your Shop Hint idea now.



1. Fuel Pump Lubrication

By Jack Nelson
Des Moines, Iowa

We have been able to triple the useful life of Ford V8 fuel pumps by providing lubrication for the actuating rod and arm. By running the oil filter return line into the pump housing as shown in the photograph we are now getting 75,000 miles on a pump instead of 25,000 miles. It has not increased our oil consumption but has improved the reliability of the pumps as well as lowered our pump costs.

2. Shackle Corks

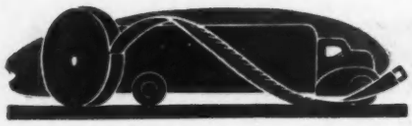
By Ernest J. Lamothe
S. B. Inc.
Springfield, Mass.

Many squeaks that develop in Chevrolet shackles are caused by the breaking of shackle corks which allows the grease to run out especially in hot weather. Before replacing these corks I cut a strip of brass shim stock 7/32 in. wide and fit it around each cork and solder it. This prevents the new corks from breaking and quite a few of them are broken during installation.

3. Spanner Wrench

By W. R. Crider
Rickerd Lumber Co.
Lansing, Mich.

The illustration shows a spanner wrench made from a length of 3/4 in. pipe and an old Reo starter chain. I have used this wrench on axle shaft and pinion nuts for seven years and have found it better than any wrench I have ever had my hands on. It is adjustable for size by removing the 8 penny nail and feeding the chain into or out of the opening cut in the pipe.



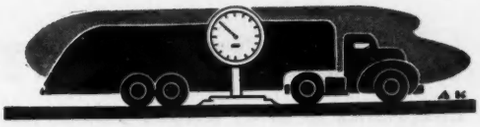
A Special Up-to-Date Revision Based Upon the

STATE SIZE AND

STATE	SIZE RESTRICTIONS (K)							GROSS WEIGHT (LEGAL LIMITS)		(See NOTE) PRACTICAL GROSS WEIGHT LIMITS (K) (In thousands of pounds) (Where No Distinction is Made Between Pneumatic and Solid Tire Limits, Below Limits Apply to Both)												
	Width (In Inches)	Height (In Feet)	LENGTH: Single Unit	LENGTH: Tractor Semi-Trailer	LENGTH: Other Combinations	Number of Trailers (Semi-Trailer = 1/2)	Minimum Tandem Axle Spacing	Per Inch of Tire Width	Per Axle (1000 lb.)	4-Wheel Single Unit	6-Wheel Single Unit	4-Wh. Tractor 2-Wh. Semi-T.	4-Wh. Tractor 4-Wh. Semi-T.	6-Wh. Tractor 4-Wh. Semi-T.	4-Wh. Truck 4-Wh. Trailer	4-Wh. Truck 6-Wh. Trailer	6-Wh. Truck 4-Wh. Trailer	6-Wh. Truck 6-Wh. Trailer	4-Wh. Tractor 2-Wh. Semi-T. 4-Wh. Trailer	4-Wh. Tractor 4-Wh. Semi-T. 4-Wh. Trailer	6-Wh. Tractor 4-Wh. Semi-T. 6-Wh. Trailer
Ala. TV	96	12½	30	40	NP	½	NS	600	16	30	30	30	30	30	NP	NP	NP	NP	NP	NP	NP
Ariz.	96	14½	35	65	65	1½	NS	700-P 500-S	18	22	34	40	44	56	44	56	56	68	62	66	90
Ark. VXZ	96	12½	35	45	45	1 or ½	40	Table	16	32	46.9-IW	53.9-IW	53.9-IW	53.9-IW	53.9-IW	53.9IW	53.9-IW	53.9-IW	NP	NP	NP
Cal. XZ	96	13½	35	60	60	NR	NS	NS-P 600-S	18	36	53.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6
Colo. X	96 102 b	12½	35	40	50	1½	40	NS-P 500-S	18-I 16-J	24	34	50.4	50.4	50.4	48	58	58	63	63	63	63
Conn. TZ	96 c 102	12½	40	40	NP	½	NS	NS-P 600-S	NS(Z)	32-P 26-S	40-P 26-S	40-P 26-S	40-P 26-S	40-P 26-S	NP	NP	NP	NP	NP	NP	NP
Del. Z	96	12½	33	60	60	1½	NS	700	18-P 16-S	26-P 22-S	36-PN 22-S	40-P 38-S	40-P 38-S	40-P 38-S	48-P 44-S	48-P 44-S	58-P 44-S	58-P 44-S	62-P 60-S	62-P 60-S	62-P 60-S
D. C. VZ	106 a 96	12½	33	33	50	NR	40	880	24.6 15.4 s	30.8-P	39.6-P	39.6-P	39.6-P	39.6-P	61.6-P	70.4-P	70.4-P	79.2-P	70.4-P	70.4-P	79.2-P
Fla. Z	84	12	35	45	45	1 or ½	NS	550	16	16-PQ 8-S	16-PQ 8-S	19-PQ 9.5-S	40-PQ 11-S	40-PQ 11-S	40-PQ 11-S	40-PQ 11-S	40-PQ 11-S	40-PQ 11-S	NP	NP	NP
Ga. X	96	13½	35	45	45	1 or ½	40	NS	18-I 16-J	36	46.9	53.9	53.9	53.9	53.9	53.9	53.9	53.9	53.9	53.9	53.9
Idaho V³	96	14	35	45	65	1½	NS	800 o	18	28	42	42	56	60	56	68	68	68	68	68	68
Illinois TV¹z	96	NS	35	35	40	1½	40	600	16	24 E	40	40	40	40	56	56	72	72	72	72	72
Indiana X	96	12	36	40	40	1½	40	800	18	36	47.6	50.4	50.4	50.4	50.4	50.4	50.4	50.4	50.4	50.4	50.4
Iowa TX	96	12	33	45	NP	½	40	NS	16-P 14-S	32-PW 28-S	35.2	40.6	40.6	40.6	NP	NP	NP	NP	NP	NP	NP
Kansas X	96	12½	35	35	45	1 or ½	40	NS	18-I 16-J	24 28 t	34	46.9	46.9	46.9	48	58	58	63	NP	NP	NP
Ky. T	96	11½	26½	30	NP	½	NS	600	NR	18	18	18	18	18	NP	NP	NP	NP	NP	NP	NP
La.	96	12½	33	45	45	1 or ½	40	600	18-I 16-J	12 PL	20 PL	20 PL	24	24	20 PL	20 PL	32 PL	32 PL	NP	NP	NP
Maine	96	12½	40 h	40 h	40 h	1 or ½	NS	600	22-G	30	40	40	40	40	40	40	40	40	NP	NP	NP
Md. X	96	NR	55	55	55	NR	NS	600	22.4 18-e	44.8	58.4	65.2	65.2	65.2	65.2	65.2	65.2	65.2	65.2	65.2	65.2
Mass.	96 102 b	NR	33 35 j	40	NS	T 1 or ½	NS	800	NR	30-P 28-S	40	40	40	40	31-P 29-S	31-P 29-S	41	41	NP	NP	NP
Mich. p	96 102 b	12½	35	50	50	1½	NS	Table	18-P 16-S	36-PW 32-S	44-PW 39.2-S	54-PW 48-S	62-PW 55.2-S	70-PW 62.4-S	72-PW 64-S	80-PW 71.2-S	80-PW 71.2-S	88-PW 78.4-S	90-PW 80-S	98-PW 87.2-S	114-PW 101.8-S
Minn. TZ	96	12½	40	40	40	1 or ½	NS	NR	18-P u 10.8-S	36-PW 21.6-S	42-PW 25.2-S	54-PW 32.4-S	60-PW 36-S	66-PW 39.6-S	42-PW 25.2-S	42-PW 25.2-S	48-PW 28.8-S	48-PW 28.8-S	NP	NP	NP
Miss.	96	12½	40	40	55	1 or ½	40	700	18-I 16-J	22	30	30	30	30	30	30	30	30	NP	NP	NP
Mo. Z	96	12½	33	40	40	1 or ½	NS	600	16	24	24	38	38	38	48	48	48	48	NP	NP	NP
Mont. XV¹	96 102 b	13½	35	60	60	1 or ½	40	600	18-P 16-S	36-P 32-S	46.9	64.4	64.4	64.4	64.4	64.4	64.4	64.4	NP	NP	NP
Neb. T	96	12	35	42	45	1½	NS	NS	16	32-W	32	40	40	40	48	48	48	48	48	48	48
Nev.	NR	NR	NR	NR	NR	NR	42	600	NR	25	38	38	38	38	50	63	63	76	63	63	76
N. H.	96	NR	33	45	45	NR	NS	800	18	30	40	40	40	40	40	40	40	40	40	40	40
N.J.	96	12½	28 35 U	45	50	1 or ½	NS	Table	Table	30	40	60	60	60	60	60	60	60	NP	NP	NP
N. M. V¹X	96 100 b	12½	35	45	45	1 or ½	40	700-P 500-S	18-I 16-J	36-I 32-J	40.2-I 40.2-J	46.2-I 46.2-J	46.2-I 46.2-J	46.2-I 46.2-J	46.2-I 46.2-J	46.2-I 46.2-J	46.2-I 46.2-J	46.2-I 46.2-J	NP	NP	NP
N. Y. X	96 106 b	13	35	50	50	1 or ½	46	800-P 640-S	22.4-P 17.9-S	36-P 28.8-S	44-P 35.2-S	61.5-P 49.2-S	61.5-P 49.2-S	61.5-P 49.2-S	61.5-P 49.2-S	61.5-P 49.2-S	61.5-P 49.2-S	61.5-P 49.2-S	NP	NP	NP
N. C.	96	12½	35	45i	45i	1 or ½	NS	600	18-I 16-J	20 L	40 L	40	40	40	40	40	40	40	NP	NP	NP
N. D. T	96	12½	35	40	40	1 or ½	40	550	18 14-f	35	35	40	40	40	40	40	40	40	NP	NP	NP
Ohio Z	96	12½	35	45	60	NR	NS	650	18-P 16-S	36-P 32-S	50.2-P 40.2-S	57.7-P 46.2-S	57.7-P 46.2-S	57.7-P 46.2-S	69-P 55.2-S	69-P 55.2-S	69-P 55.2-S	69-P 55.2-S	69-P 55.2-S	69-P 55.2-S	69-P 55.2-S

Recent Changes Enacted by State Legislatures

WEIGHT LIMITS



STATE	SIZE RESTRICTIONS (K)							GROSS WEIGHT (LEGAL LIMITS)		(See NOTE) PRACTICAL GROSS WEIGHT LIMITS (K) (In thousands of pounds) (Where No Distinction is Made Between Pneumatic and Solid Tire Limits, Below Limits Apply to Both)												
	Width (In Inches)	Height (In Feet)	LENGTH: Single Unit	LENGTH: Tractor Semi-Trailer	LENGTH: Other Combinations	Number of Trailers (Semi-Trailer = 1½)	Minimum Tandem Axle Spacing	Per Inch of Tire Width	Per Axle (1000 lb.)	4-Wheel Single Unit	6-Wheel Single Unit	4-Wh. Tractor 2-Wh. Semi-T.	4-Wh. Tractor 4-Wh. Semi-T.	6-Wh. Tractor 4-Wh. Semi-T.	4-Wh. Truck 4-Wh. Trailer	4-Wh. Truck 6-Wh. Trailer	6-Wh. Truck 4-Wh. Trailer	6-Wh. Truck 6-Wh. Trailer	4-Wh. Tractor 2-Wh. Semi-T. 4-Wh. Trailer	4-Wh. Tractor 4-Wh. Semi-T. 4-Wh. Trailer	6-Wh. Tractor 4-Wh. Semi-T. 6-Wh. Trailer
Okla.	96	12½	45	45	45	1½	NS	600	NS	24	24	47	47	47	47	47	47	47	47	47	47
Ore. VXZ	96	11	35	50	50	NR	40	600 q	18 w 16 x	‖34	‖46.9 w 46.9 x	‖46.9 w ‖46.9 x	‖46.9 w ‖46.9 x	‖46.9 w ‖46.9 x	54	54	54	54	54	54	54
Pa. Z	96	12½	33	45	50	1 or ½	36	800	18 y	26 H	36 H	39	39	39	52	62	62	62	NP	NP	NP
R. I.	102	12½	NR	45	45	1 or ½	NS	800	22.4	32-P 28-S	40	40	40	40	64-P 56-S	72-P 68-S	72-P 68-S	80	NP	NP	NP
S. C. X	96	12½	35	45	45	1 or ½	40	NR	18-I 16-J	25	‖25	‖40	‖40	‖40	‖40	‖40	‖40	‖40	NP	NP	NP
S. D.	96	13	30	40	40	1 or ½	NS	NR	NR	20	24	30	30	30	30	30	30	30	NP	NP	NP
Tenn.	96	12	27	35	35	1 or ½	NS	NS	16	30	30	30	30	30	30	30	30	30	NP	NP	NP
Tex. X	96	12½	35	45	45	1 or ½	40	650-I 600-J	18-I 16-J	‖36	‖38	‖38	‖38	‖38	‖38	‖38	‖38	‖38	NP	NP	NP
Utah XZ	96	14½	45	60	60	1 or ½	NS	800 o	18-P 13.5-S	‖36-P ‖27-SW	‖53.9-P ‖40.4-S	‖64.4-P ‖48.3-S	‖64.4-P ‖48.3-S	‖64.4-P ‖48.3-S	‖64.4-P ‖48.3-S	‖64.4-P ‖48.3-S	‖64.4-P ‖48.3-S	‖64.4-P ‖48.3-S	NP	NP	NP
Vt. Z	96	12	50	50	50	1 or ½	40	600	NR	28 M 16	40 M 16	40 M 16	40 M 16	40 M 16	40 M 16	40 M 16	40 M 16	40 M 16	NP	NP	NP
Va. VZ	96	12½	33 g	45	45	1 or ½	40	650	16	24	35	35	35	35	35	35	35	35	NP	NP	NP
Wash. X	96	12½	35	60	60	1 or ½	NS	500	18	‖28	‖34	‖69	‖69	‖69	‖69	‖69	‖69	‖69	NP	NP	NP
W. Va. W¹XZ	96	12½	35	45	45	NR	40	NS	18-PB 14-SB	36-PWB 28-SB	54-PWB 42-SB	54-PWB 42-SB	72-PWB 56-SB	90-PWB 70-SB	72-PWB 56-SB	90-PWB 70-SB	90-PWB 70-SB	102.4PB ‖81.9-SB	90-PWB 70-SB	‖102.4PB ‖81.9-SB	‖102.4PB ‖81.9-SB
Wisc. VZ	96 d	12½	33 ‖35 j	45	45	1 or ½	40	800	19-C 12-D	24-Ck 15-D	36-C 22.5-D	43-C 27-D	48-C 30-D	60-C 37.5-D	48-C 30-D	60-C 37.5-D	60-C 37.5-D	72-C 45-D	NP	NP	NP
Wyo. X	96	12½	40	45	45	NR	NS	800	18	‖36	‖43.2	‖46.2	‖45.2	‖46.2	‖46.2	‖46.2	‖46.2	‖46.2	‖46.2	‖46.2	‖46.2

‖—See explanation in Note at right.
a—If registered before 1932.
b—At rear tires, when solids changed to pneumatics.
c—Regulated "for hire" vehicles.
d—104 inches for urban buses.
e—If less than 50 inches apart.
f—If less than 8 feet apart.
g—Buses allowed 35 ft. length.
h—Trailers are limited to 26 feet.
i—Exclusive of bumpers.
j—Buses permitted 35 feet.
k—Special limitations, vehicles with 2 driving axles.
o—Graduated according to tire width.
p—13,000 lbs. on tandem axles 3 ft. 6 in. apart; applies June 1 to February 28; differs with season.
q—500 lbs. when total tires under 30 inches wide.
s—Permissible on axles spaced under 12 feet.
t—Dual tires 8 inches wide or over.
u—12,000 lbs. when axles spaced under 8 feet apart.
w—Permissible weight on paved highways.
x—Permissible weight on unpaved highways.
y—16,500 lbs. on rear, 8,000 lbs. on front axle of 6-wheeled vehicle.
z—The city of Clinton, Ill., limits gross weight of trucks to 12,000 lbs.

Table—There is a table of axle weights based upon tire widths.
NP—Not permitted. P—Pneumatic tires.
NR—No restriction. PL—Pay load.
NS—Not specified. S—Solid tires.
B—In "Industrial Areas"—varies for different "areas."
C—Permissible on "Class A" highways.
D—Permissible on "Class B" highways.
E—Trailers permitted 32,000 lbs.
G—Axles less than 10 ft. apart limited to 16,000 lbs.
H—Maximum shown—gross depends on chassis weight.
I—Permissible on balloon tires.
J—Permissible on other than balloon tires.
K—May exceed on designated highways with permit.
L—Buses permitted 22,500 maximum net weight.
M—On state highways.
N—38,000 lbs. with pneumatic tires, 3 axles, 2 hubs and brakes on each hub.
Q—Different limits for "for hire" vehicles.

NOTE ON "W" AND SHADED SQUARES

Except when shown in squares shaded with parallel lines or when followed by the letter "W," the above gross weight limits are the limits fixed by state law.

When shown in shaded squares the above limits are computations made by the National Highway Users Conference to show what it considers to be practical gross weights where gross weights are arrived at by application of one of the formulae shown below under Footnote "X." In making these computations, wheel base was arrived at by deducting 8 ft. total over-hang front and rear from permissible overall length of unit or combination; tandem axles were considered to be a minimum permissible distance apart; H-20 bridge formula was used in West Virginia. When actual over-hang is less than 8 ft. additional gross weight will be possible.

When followed by the letter "W," the limits shown are maximum possible weights where gross weight is determined by permissible axle weight. These limits are possible only when each axle carries a gross weight equal to the permissible axle limit as shown.

T—With the following exceptions full trailers are permitted the same gross weight as other single units:—
Ala., Iowa, Conn., Ky.—Full trailers prohibited.
Ill.—All trailers limited to 32,000 lbs. gross.
Mass.—Trailers limited to 1,000 lbs. capacity.
Minn.—Trailers limited to 6,000 lbs. gross.
Nebr.—All trailers limited to 16,000 lbs. gross.
N. Dak.—Trailers, 35,000 lbs.
Weight of trailers is limited by axle limitations and formula, in states determining gross weight by formula.
U—35 ft. allowed on vehicles with three axles.
V—Solid tires prohibited.
V¹—Solid tires prohibited except on property carrying vehicles operating at 10 miles per hour or less.
V²—Solid tires limited to 20 miles per hour under 10,000 lbs., and to 12 miles per hour over 10,000 lbs.
W—See Note at left.

W¹—Maximum gross when all axles carry maximum load—See "Note."
X—States where gross weight is determined by formula (See formula computations on next page).
Ark.—650-700 (L plus 40) two or more consecutive axles and any unit or combination.
Cal.—800 (L plus 40) applies to vehicles and combinations first registered on or after Jan. 1, 1942, if total wheel base exceeds 18 feet; 700 (L plus 40) applies to vehicles and combinations if axle spacing 18 feet or less, first registered on or after Jan. 1, 1942; 850 (L plus 40) or 68,000 lbs. maximum, if total wheel base is between 25 and 45 feet, inclusive, for vehicles and combinations first registered prior to Jan. 1, 1942; terminates Jan. 1, 1952. 800 (L plus 40) if axle spacing of two or more axles is between 14 and 18 feet, inclusive, for vehicles and combinations first registered prior to Jan. 1, 1942; terminates Jan. 1, 1952.
Colo.—700 (L plus 40) semi-trailers.
Ga.—700 (L plus 40) any unit or combination.
Ind.—700 (L plus 40) two or more consecutive axles and any unit or combination.
Iowa—450 (L plus 53-½) any unit or combination; vehicles registered in Iowa permitted 17,000 lbs. axle weight and gross of 28,000 lbs. plus 500 lbs. per foot of axle spacing.
Kans.—700 (L plus 40) only applies to combinations.
Mont.—650 (L plus 40) for axle spacing to 20 ft. and 700 (L plus 40) above 20 ft.
N. M.—600 (L plus 40) two or more consecutive axles and any unit or combination.
N. Y.—750 (L plus 40) three or more consecutive axles and any unit or combination.
Ore.—700 (L plus 40) any unit or combination.
S. C.—700 (L plus 40) any unit or combination.
Texas—700 (L plus 40) any unit or combination.
Utah—700 (L plus 40) any unit or combination.
Wash.—750 (L plus 40) any unit or combination if axle spacing over 18 feet: 550 (L plus 40) if axle spacing 18 feet or less.
W. Va.—1330-1000-870 (L plus 40) applies to highways dependent on type of bridges thereon.
Wyo.—600 (L plus 40) two or more consecutive axles and any unit or combination.
Z—See detailed comment by States on next page.

NATIONAL HIGHWAY USERS CONFERENCE, National Press Bldg., Washington, D. C.
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GROSS WEIGHTS COMPUTED BY FORMULAS

Computation of Gross Weights according to formulas, based on distance (in feet) between first and last axles, for States identified in State Size & Weight Limits chart by Footnote "X." It should be remembered that the figures in each column represent only a mathematical extension and are governed by Legal Overall Length Limits for single units and combinations of particular states. Also, that formula computations are superseded in some instances by specific limits given in the chart.

"L" (See Note Below)	Iowa	Ohio[7]	Indiana New Mexico Wyoming	Arkansas[1] Montana[3] Washington[6]	West Virginia (H-10 Bridges)	Arkansas,[2] California[9], Colorado, Georgia, Kansas, Montana[4], Oregon, S. Carolina, Utah	New York Ohio[8] Washington[5]	West Virginia (H-15 Bridges)	West Virginia (H-20 Bridges)	California[10]	California[11]	"L" (See Note Below)
	450 (L + 53½)	18000 + (L × 1500)	600 (L + 40)	650 (L + 40)	670 (L + 40)	700 (L + 40)	750 (L + 40)[8]	1000 (L + 40)	1330 (L + 40)	800 (L + 40)	850 (L + 40)	
3 ft.	25350 lbs.	22500 lbs.	25800 lbs.	27950 lbs.	28810 lbs.	30100 lbs.	32250 lbs.	43000 lbs.	57190 lbs.	..... lbs.	..... lbs.	3 ft.
4	25800	24000	26400	28600	29480	30800	33000	44000	58520	.....	.....	4
5	26250	25500	27000	29250	30150	31500	33750	45000	59850	.....	.....	5
6	26700	27000	27600	29900	30820	32200	34500	46000	61180	.....	.....	6
7	27150	28500	28200	30550	31490	32900	35250	47000	62510	.....	.....	7
8	27600	30000	28800	31200	32160	33600	36000	48000	63840	.....	.....	8
9	28050	31500	29400	31850	32830	34300	36750	49000	65170	.....	.....	9
10	28500	33000	30000	32500	33500	35000	37500	50000	66500	.....	.....	10
11	28950	34500	30600	33150	34170	35700	38250	51000	67830	.....	.....	11
12	29400	36000 max.	31200	33800	34840	36400	39000	52000	69160	.....	.....	12
13	29850	.....	31800	34450	35510	37100	39750	53000	70490	.....	.....	13
14	30300	.....	32400	35100	36180	37800	40500	54000	71820	43200	.....	14
15	30750	.....	33000	35750	36850	38500	41250	55000	73150	44000	.....	15
16	31200	.....	33600	36400	37520	39200	42000	56000	74480	44800	.....	16
17	31650	.....	34200	37050	38190	39900	42750	57000	75810	45600	.....	17
18	32100	.....	34800	37700	38860	40600	43500	58000	77140	46400	.....	18
19	32550	.....	35400	38350	39530	41300	44250	59000	78470	47200	.....	19
20	33000	.....	36000	39000	40200	42000	45000	60000	79800	48000	.....	20
21	33450	.....	36600	39650	40870	42700	45750	61000	81130	48800	.....	21
22	33900	.....	37200	40300	41540	43400	46500	62000	82460	49600	.....	22
23	34350	.....	37800	40950	42210	44100	47250	63000	83790	50400	.....	23
24	34800	.....	38400	41600	42880	44800	48000	64000	85120	51200	.....	24
25	35250	.....	39000	42250	43550	45500	48750	65000	86450	52000	55250	25
26	35700	.....	39600	42900	44220	46200	49500	66000	87780	52800	56100	26
27	36150	.....	40200	43550	44890	46900	50250	67000	89110	53600	56950	27
28	36600	.....	40800	44200	45560	47600	51000	68000	90440	54400	57800	28
29	37050	.....	41400	44850	46230	48300	51750	69000	91770	55200	58650	29
30	37500	.....	42000	45500	46900	49000	52500	70000	93100	56000	59500	30
31	37950	.....	42600	46150	47570	49700	53250	71000	94430	56800	60350	31
32	38400	.....	43200	46800	48240	50400	54000	72000	95760	57600	61200	32
33	38850	.....	43800	47450	48910	51100	54750	73000	97090	58400	62050	33
34	39300	.....	44400	48100	49580	51800	55500	74000	98420	59200	62900	34
35	39750	.....	45000	48750	50250	52500	56250	75000	99750	60000	63750	35
36	40200	.....	45600	49400	50920	53200	57000	76000	101080	60800	64800	36
37	40650	.....	46200	50050	51590	53900	57750	77000	102410	61600	65450	37
38	41100	.....	46800	50700	52260	54600	58500	78000	103740	63400	66300	38
39	41550	.....	47400	51350	52930	55300	59250	79000	105070	63200	67150	39
40	42000	.....	48000	52000	53600	56000	60000	80000	106400	64000	68000 max.	40
41	42450	.....	48600	52650	54270	56700	60750	81000	107730	64800	.....	41
42	42900	.....	49200	53300	54940	57400	61500	82000	109060	65600	.....	42
43	43350	.....	49800	53950	55610	58100	62250	83000	110390	66400	.....	43
44	43800	.....	50400	54600	56280	58800	63000	84000	111720	67200	.....	44
45	44250	.....	51000	55250	56950	59500	63750	85000	113050	68000	.....	45
46	.....	.....	.....	55900	.....	60200	64500	.....	.....	68800	.....	46
47	.....	.....	.....	56550	.....	60900	65250	.....	.....	69600	.....	47
48	.....	.....	.....	57200	.....	61600	66000	.....	.....	70400	.....	48
49	.....	.....	.....	57850	.....	62300	66750	.....	.....	71200	.....	49
50	.....	.....	.....	58500	.....	63000	67500	.....	.....	72000	.....	50
51	.....	.....	.....	59150	.....	63700	68250	.....	.....	72800	.....	51
52	.....	.....	.....	59800	.....	64400	69000	.....	.....	73600	.....	52
53	.....	.....	.....	60450	.....	65100	69750	.....	.....	74400	.....	53
54	.....	.....	.....	61100	.....	65800	70500	.....	.....	75200	.....	54
55	.....	.....	.....	61750	.....	66500	71250	.....	.....	76000	.....	55
56	.....	.....	.....	62400	.....	67200	72000	.....	.....	.....	.....	56
57	.....	.....	.....	63050	.....	67900	72750	.....	.....	.....	.....	57
58	.....	.....	.....	63700	.....	68600	73500	.....	.....	.....	.....	58
59	.....	.....	.....	64350	.....	69300	74250	.....	.....	.....	.....	59
60	.....	.....	.....	65000	.....	70000	75000	.....	.....	.....	.....	60

"L" = distance in feet between first and last axles of group of axles considered

1—Arkansas vehicles with axles spaced not more than 7 ft. apart.

2—Arkansas vehicles with axles spaced over 7 ft. apart.

3—Montana vehicles with axles spaced not more than 20 ft. apart.

4—Montana vehicles with axles spaced over 20 ft. apart.

5—Washington vehicles with axles spaced over 18 ft.

6—Washington vehicles with axles spaced 18 ft. or less.

7—Ohio—applies to two successive axles only; see footnote 8.

8—Ohio—applies to three or more axles. In Ohio the formula which applies to these cases is "30,000 plus (length times 750)", which results in the same figures as used above for "750 times (length plus 40)". See footnote 7.

9—In California this applies (up to 18 feet) to any two or more axles on any vehicle or combination which was first registered on or after Jan. 1, 1942.*

10—This applies (1) to any vehicle or combination with total wheel base exceeding 18 ft. which was first registered on or after Jan. 1, 1942.*
(2) to any vehicle or combination, which was first registered prior to Jan. 1, 1942, having a group of two or more axles, where the distance between the first and last axles of the group is between 14 and 18 ft., inclusive. Terminates Jan. 1, 1952.*

11—This applies to any vehicle or combination first registered prior to Jan. 1, 1942, where the total wheel base is between 25 and 45 ft., inclusive. Maximum 68000 lbs. Terminates Jan. 1, 1952.*

*—Note concerning California—the above limitations will become effective Jan. 1 1942; until that time the formula of 1750 (L plus 8) will apply, with a maximum limit of 68000 lbs.

RESTRICTIONS PECULIAR TO CERTAIN STATES

ARK..... Maximum gross weights subject to maximum capacity based on tire sizes. Tolerance of 7½ per cent is allowed above allowances listed per tire sizes shown in Table (NHUC Size & Weight Book), but maximum axle weight is limited to 16,000 lbs. Vehicle weight allowances shown in State Size & Weight Limits chart are calculated on the basis of 8,000 lbs. on the front axle and 16,000 lbs. on all others. Single unit buses allowed axle weight of 17,600 lbs. if equipped with dual mounted low pressure tires not less in size than 10.50 x 22 in.

CALIF... 18,000 lbs. per axle permitted on vehicles, registered prior to 1930 (11,000 per wheel), until Dec. 31, 1942.

CONN... Not more than 80 per cent of vehicle gross on any one axle.

DELA.... 2,000 lbs. additional allowed on three-axled trucks with pneumatic tires and two hubs and brakes on each hub.

D. C..... Solid tires, when permitted, allowed 10 per cent less than pneumatics.

FLA..... Private vehicles allowed 16,000 lbs. with power brakes and six tires.

For hire vehicles: (Solid tires forbidden.)
Trucks allowed 24,000 lbs. with power brakes and 12,000 lbs. unladen.
Tractor-semi trailer allowed 40,000 lbs. if both vehicles have power brakes.
Four-wheeled trailer allowed 20,000 lbs. with power brakes and over-sized tires.
No unit may carry a payload over 12,000 lbs.

MINN... When axles spaced under 8 ft. apart restricted to 12,000 lbs. on pneumatics and 7,200 lbs. on solid tires.

(CONTINUED AT BOTTOM OF NEXT PAGE)

The Significance of the A-3 Priority.....The I.C.C. Outflanks the Railroads
Commissioner Splawn's Dissent

The Significance of the A-3 Priority

THE granting to the truck and allied industries of an A-3 priority on materials, coupled with a liberal production arrangement, is an extremely significant development. It is official recognition of truck transportation on a par with its chief opponent and competitor, the railroads, and an indication that maintenance and expansion of motor transport facilities are an affair of vital national importance. Here, truly, is a milestone in the history of truck transportation.

A priority is of little use unless it makes available the necessary materials. The railroads found that out. However, the variety of moves made and planned by defense authorities should greatly improve the truck industry's chances of getting needed materials to produce all the vehicles and parts for which there is a civilian demand.

Steel has been made the object of a mandatory priority and the production of goods of a non-defense character is being stringently curtailed. Many of those goods involve the use of materials that can be used in trucks, trailer and parts. The restrictions on non-defense industries will relieve many critical materials and the A-3 priority should have real meaning.

Trucks, trailers and replacement parts require few materials that are not used in passenger cars. As matters now stand the truck and allied industries have first call on those materials. The demands made on them must be met before those of the passenger-car industry. And with a 50 per cent curtailment in prospect for the passenger car industry it is inconceivable that the A-3 priority, coupled with the use of alternate materials where necessary, should fail to have the object intended by those in authority.

The I.C.C. Outflanks the Railroads

THE recommendation of the full membership of the Interstate Commerce Commission—with one inconsequential dissent—that Congress enter the field of truck size and weight regulation is a momentous and heartening event.

If Congress adopts the plan suggested by the I.C.C. (and reported in detail elsewhere in this issue) it will mean the legislative lobbying battlefront of the railroads, erected and maintained at a huge expenditure of time, effort and money, has been outflanked and the way opened up for motorized panzer divisions to move in and mop up the mess of inequitable, unreasonable, politically-inspired restrictions.

The action of the I.C.C. is a signal tribute to truck transportation and a criticism of railroads because the Commission cannot be ignorant of the fact that the railroads are chiefly responsible for the conditions which the Commission now asks Congress to remedy. It is heartening because it shows, better than any other action at this time could show, that the Commission recognizes the need in the current emergency for cleaning up the State-erected obstacles to the free flow of interstate commerce; obstacles

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(CONTINUED FROM PREVIOUS PAGE)

MO...... Special size and weight limitations apply in cities of 75,000 population or over.

OHIO.... Vehicles in use before Jan. 1, 1942, until Aug. 13, 1947, allowed—

	Pneumatic Tires	Solid Tires
Single units.....	24,000 lbs.	20,000 lbs.
Tractor-semi-trailer.	42,000	36,000
Other combinations.	66,000	56,000

ORE..... The greatest allowances shown in State Size & Weight Limit chart are permitted on paved highways, and the lowest allowances are the maxima permitted on unpaved highways.

PA..... Six-wheelers must have minimum axle spacing of 36 in. between the two rear axles. Buses operating within municipalities exempted from 18,000 lbs. axle and 26,000 lbs. gross limits.

UTAH... Gross weight also limited to three times unladen weight.

VT..... The greatest allowances shown in State Size & Weight Limit chart are permitted on state highways, medium allowances are the maxima permitted on state-aid highways, and the lowest allowances are the maxima permitted on other highways.

VA..... Two-axled vehicles with six-wheels permitted 32,000 lbs. gross.

W. VA... No unit may carry a load more than 100 per cent greater than its registered capacity if registered for not over two tons; or more than 50 per cent greater if registered for over two but not over four tons; or more than 25 per cent greater if registered for over four tons.

WISC.... Four-wheeled vehicles with two driving axles spaced 8 ft. or more apart permitted gross weight of 28,000 lbs.; if gross weight exceeds 24,000 lbs., the axle weight must not exceed 16,000 lbs. if equipped with high pressure pneumatic tires or 18,000 lbs. if equipped with balloon or low pressure tires.

FOR LOOKS

KRUG LIKES LACQUER

Neil McEwen

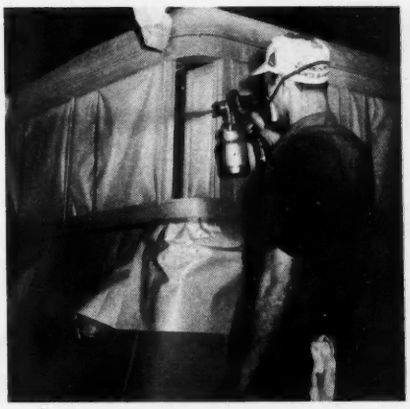
WHEN it comes to pulchritude in a motor vehicle, the Krug Baking Co. has a fleet of handsome trucks that can tie knots in any operator's beauty procedure. Not that Krug has a better equipped paint and wash shop, or that this company uses modern equipment not available to others. It's just that Krug has bigger ideas on the subject of keeping a truck spotless.

A Krug truck is a Krug salesman, and there are over 800 of these motorized representatives plying the highways between Long Island and Westchester, in New York State, and in the Newark and Ridgewood areas of New Jersey. Each truck looks as spick and span as an Englishman dressed for dinner. And when a Krug truck stops at Madam's door, it is received with enthusiasm that has other bakeries green-eyed with envy.

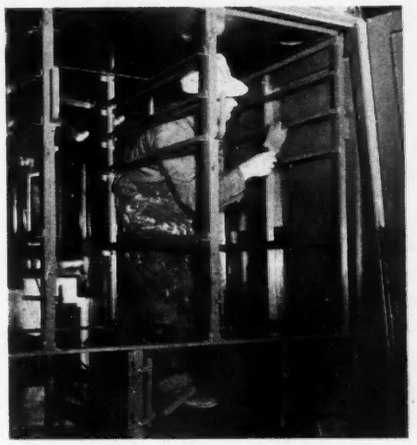
If Krug has discovered the fountain of youth for its motor vehicles, the fountain springs from Krug's own paint shop where eight men diligently ply their trade of beauty culture. But before we follow the fleet through the paint shop, let's first see what conditions these vehicles operate under.

Like the British, Krug has a six-ocean fleet. That is to say, the fleet operates in six areas of which four are in New York state and two in New Jersey. The company maintains garages in each of these areas, but its main group of garages surrounds the company's offices in Jamaica, Long Island, N. Y. In one of these garages is located the paint shop that services the entire fleet.

The New York operation includes



Beginning above: Old finish is removed by hand-scraping and metal surface is sandpapered; then the surface is blown clean with high-pressure air-hose and wiped with varnish tack rag; after priming, windows are masked and four light coats of lacquer are sprayed on in an hour's time; next interior iron-work is treated with synthetic enamel; after which decals with a specially varnished surface are applied; and finally the paint job is dated inside the truck body. At left: A finished paint job. Lower left: Neil McEwen, fleet superintendent



The program of a bakery fleet for keeping its trucks looking just as fresh as the baked goods it vends

by NEIL McEWEN

Superintendent of Transportation, Geo. A. Krug Baking Co.

a combination of urban and suburban areas so that part of the fleet gets its share of tar, dirt and bumps peculiar to city traffic. Another part of the fleet operates in residential areas and suburban regions of dusty roads, mud holes and trees that spread prolifically in every direction. The New Jersey operation, in both city and suburb, is through heavy traffic and is no cinch regardless from which angle you view it. If the city trucks are endangered by the wear and tear of heavy traffic, the suburban vehicles must contend with mud and dust, and with scratches received from low hanging tree branches and rough tree trunks.

Under no circumstances can it be said that the fleet operates under favorable conditions. Most places would be a lark in comparison. It is worth mentioning at this time that despite the tough operating zones, Krug not only manages to keep its fleet clean, but safe, too. The entire fleet runs 6 to 7 million miles yearly, and in 1940 it succeeded in winning the New York Safety Council award in the bakery class with a score of 252,258 miles per accident. If you

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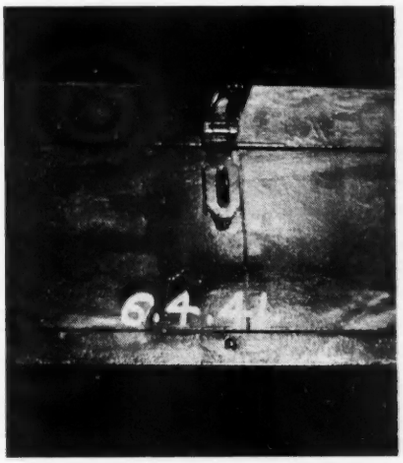


A BRITISH FLEETMAN

He tells what it is like to operate a fleet under wartime conditions of shortages, restrictions, regulation, and dislocations caused by bombings

by A LONDON OPERATOR

(As told to W. K. Fudge and passed by the Censor)

I WOULD like to start by saying that whilst countless war-time difficulties and problems arise, so far I have never had one that it has not been possible somehow to surmount. And that is the experience of every other operator I know of. Of course, we grouse a bit at times; but usually we are getting on with the job even whilst we are grumbling.

In war-time we all have to work much harder, but then we are making a higher ratio of profit: and, believe me, there is something personally satisfying in the knowledge that one's work is of vital importance in the country's war effort. Also, no longer have we to seek contracts or loads; every fleet has more loads offered than it can carry.

The most important phase of present-day operating here in England is the grouping system. Actually this system, which is under the direct control of the Ministry of Transport, existed three or four months before the outbreak of the war. Participation in the grouping system has always been voluntary, but the registration of every commercial vehicle with the ministry is compulsory. In war-time, however, any fleet not included in a group would be unable to obtain any supplies of fuel, and consequently every fleet is in fact incorporated in a group. I will explain the working of the transport grouping system.

The whole country is divided up into districts, and all transport vehicles in each district must be registered with the district manager, who forms them into convenient groups of (generally) up to 100 vehicles. The district manager is an official of the Ministry of Transport, and establishes an office in the district he controls. The district manager in turn appoints a manager for each group of vehicles in his district, and these group managers are in all cases executives of operating firms.

Each group consists of from about 70 to 100 vehicles, owned by perhaps as many as 20 operators. A large operating firm, with a big enough fleet, would constitute a complete group in itself, with its general manager or other executive automatically appointed its group manager. But where the fleets of several operators combine to form a group, the district manager usually offers the position of group manager to the operator of the largest individual fleet in the group. There is no compulsion on the selected operator to accept the appointment, but in point of fact the position is only very seldom declined. If, however, the selected operator does decline to act, the district manager will offer the post to the next largest operator in the same group.

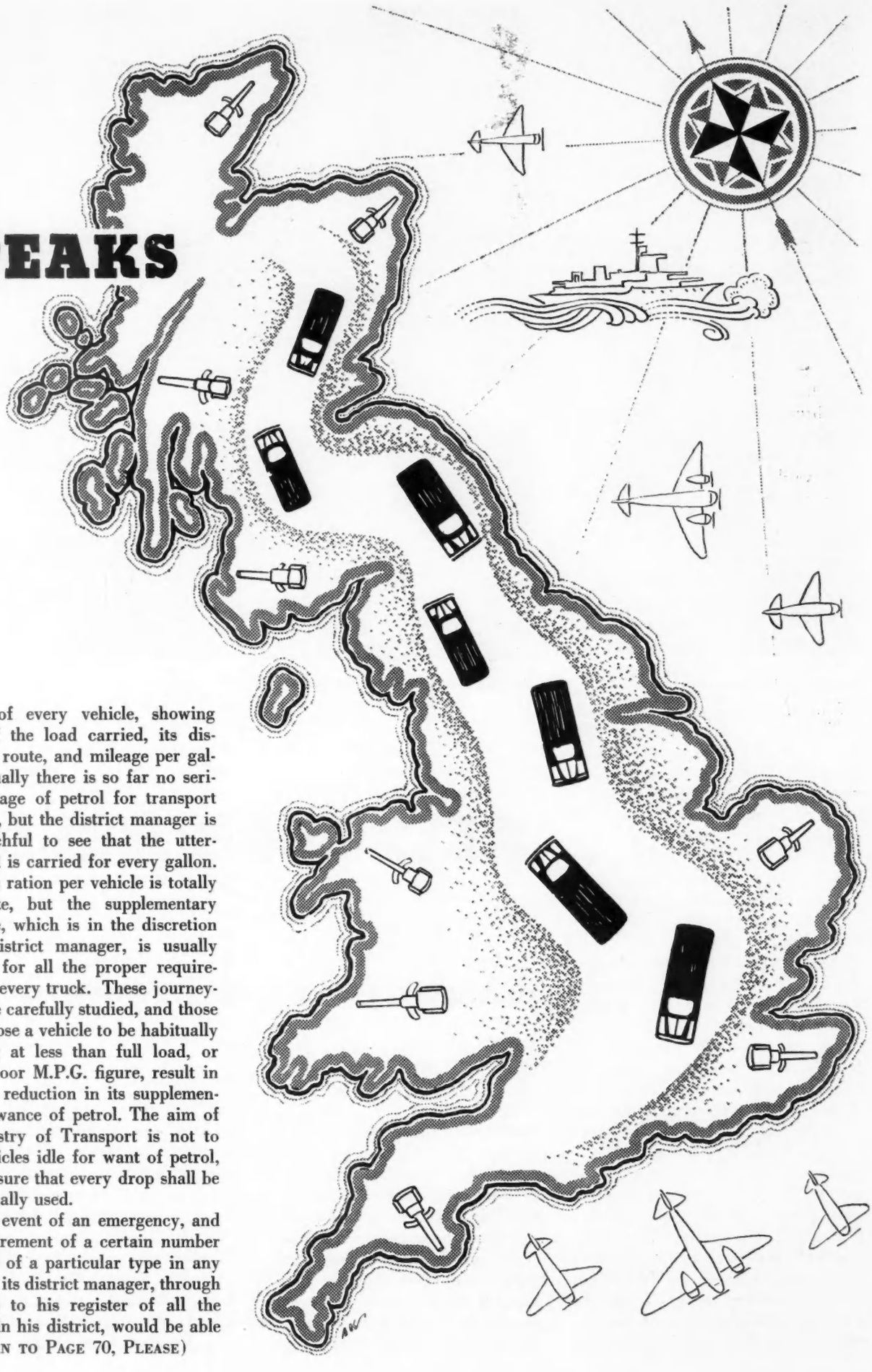
When the war started, group managers were in receipt of no remuneration for their work; but subsequently the Ministry of Transport paid them £2 (about $8.00) per month for their services. After a few months, however, this payment was stopped, and the group managers returned to an honorary basis.

An operator who accepts the position of group manager has full liberty to resign at any time he may wish to do so, and also, if he is inefficient or in any serious way unsatisfactory to the district manager, the latter can call for his resignation.

Whilst the duties of the group manager are not arduous, they carry considerable responsibilities. He is the medium between all the operators in his group and the district manager of the Ministry of Transport. It is the group manager who draws the rations and supplementary allowances of petrol for all the vehicles in the group. Whilst each operator fills up the necessary forms for securing petrol for each vehicle in his fleet, all such forms have to be countersigned by the group manager and by him lodged with the district manager. Such returns are made every 14 days.

A chart has to be kept for each

SPEAKS



journey of every vehicle, showing details of the load carried, its dispersal en route, and mileage per gallon. Actually there is so far no serious shortage of petrol for transport operators, but the district manager is ever watchful to see that the uttermost load is carried for every gallon. The basic ration per vehicle is totally inadequate, but the supplementary allowance, which is in the discretion of the district manager, is usually sufficient for all the proper requirements of every truck. These journey-charts are carefully studied, and those that disclose a vehicle to be habitually travelling at less than full load, or show a poor M.P.G. figure, result in a drastic reduction in its supplementary allowance of petrol. The aim of the Ministry of Transport is not to keep vehicles idle for want of petrol, but to ensure that every drop shall be economically used.

In the event of an emergency, and the requirement of a certain number of trucks of a particular type in any one area, its district manager, through reference to his register of all the vehicles in his district, would be able

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Interior views of the shop in which Reliable maintains its 35-unit fleet at

RELIABLE RELIES

And Indiana fleet finds it reliable after four

"THE problems involved in operating our fleet of 35 units require unusual servicing," explained Charles McKinley, owner of the Reliable Oil Co., Fort Wayne, Ind., "because the fleet operates under such widely varying conditions."

About 25 per cent of the delivery trucks are employed full time in oil and gasoline deliveries in and adjacent to Fort Wayne. "Quick and efficient service is essential to hold our dealer trade and to supply our own stations," McKinley pointed out, "and each one of these units must always be in A-1 condition—hence—weekly inspections thoroughly made."

The remaining 75 per cent of the fleet is engaged in commercial trucking. About one-half of these units make regular runs to large cities in a 150-miles radius on scheduled time.

The other units make longer runs of 200 to 330 miles into Kentucky, Ohio, Illinois and Michigan—to whatever point a load may be destined.

"It is company policy," said McKinley, "that regardless of where one of our trucks is, in case of major repairs, our own service goes to the rescue. But thanks to rigid inspections and prompt adjustments of any fault, major or minor, it has not been necessary to pull in or repair a broken down unit on the country highways since we started our own maintenance work four years ago."

The average weekly mileage ranges between 35,000 and 40,000 miles per week, city and country combined, or about 1000 miles per unit. The primary factor in the maintenance policy is lubrication.

This is emphasized in the fact that each truck is greased completely every week along with the weekly inspection service. Portable pressure greasing equipment and a hydraulic lift of 3-ton capacity speed the job along. A wheel bearing packer is used to assure proper lubrication of this important part. The unit is sealed and kept clean so that no sand or abrasive can get into the working parts. This treatment makes bearings last indefinitely, obviates road troubles and saves no end of time in the process.

Inspections are speeded up appreciably in these weekly services from experienced knowledge of where to look for likely trouble. Although no points are overlooked, special attention is given to parts where the greatest strains prevail and based on type of loads carried.

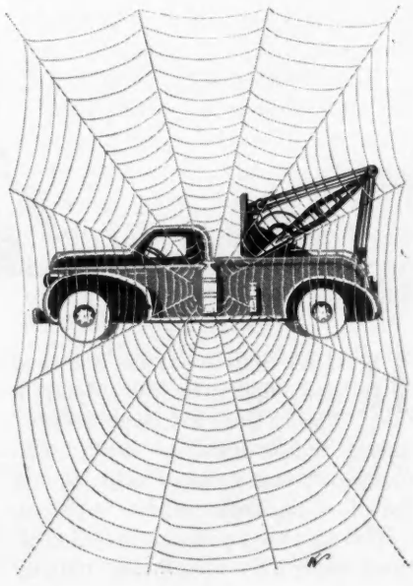
"Wheel bearings are watched with special care," Foreman Erwin Meyers said, "and also the clutches on all units. We check them religiously for proper clearance. If too tight, or too flexible, a clutch may easily be ruined in 1000 miles of driving. A few seconds of inspection save future trouble and prevent costly delays and expen-

peak efficiency, showing modern pieces of shop equipment in use . . . Also a view of one of the tractor-trailer combinations

ON SELF SERVICE

. . . . by A. E. HOLDEN

years in which there hasn't been a road failure



sive replacements. Gas line inspections include a careful check-up on points where they pass through the frames and brackets where vibrations or rubbing may wear the lines so thin they eventually break through."

While the company carries essential parts for night emergency work, no large stocks are carried as quick service is available from local jobbers. However, some items such as storage batteries and tires are stocked for both the fleet's own use and resale. Battery inspections are an important part of the job and 14 spare batteries are on hand for emergency replacements.

Brake fluid inspections on hydraulic-equipped units are made regularly, and as six of the trucks have vacuum air brakes, it is important to

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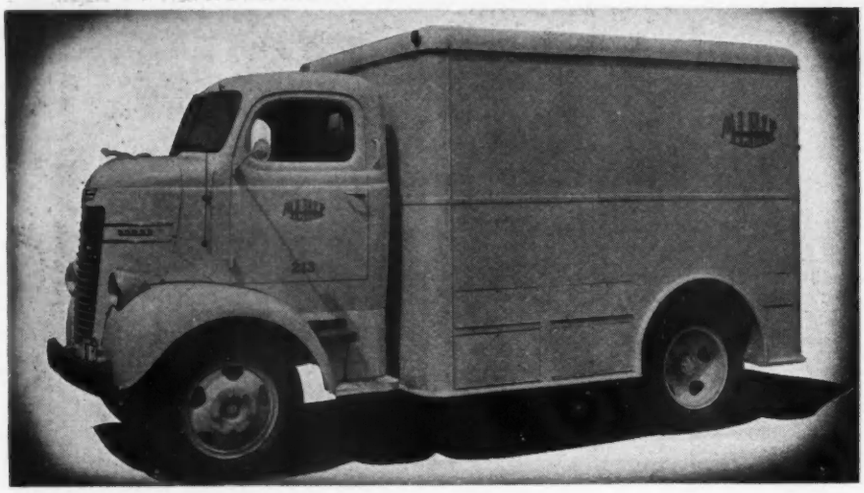


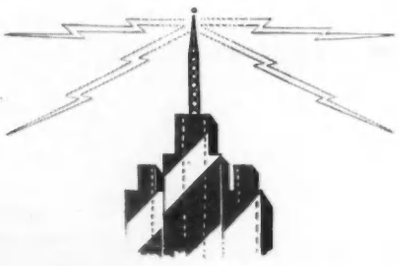
Left: A radio-equipped MLH&P truck. Above: Haberl broadcasts a message. He was formerly with Public Service of N. J.; Duquesne Light, Pittsburgh.

STATION CY5Y

A Montreal utility uses a radio transmitter to keep in touch with emergency vehicles. Herewith some of its problems, cost and record of operating experience

by **HERBERT W. HABERL**

Protection Engineer, Montreal Light Heat & Power Consolidated



RADIO Station CY5Y is owned and operated by Montreal Light, Heat & Power Consolidated, and is used to contact the company's emergency vehicles on patrol at any hour of day or night.

The territory covered by MLH&P truck service is describable roughly as the Island of Montreal, 30 miles by 10 miles in area, and extensions to a certain number of points beyond that. Company power stations are located at Beauharnois, on Lake St. Francis; at Cedars, toward the foot of the Soulanges Canal; on the Riviére des Prairies, north of Montreal; and at Chambly, on the Richelieu River.

Therefore the physical installation to be serviced consists of the electrical connecting lines between these outside points and nearby neighborhoods, and the City of Montreal proper with its immediately surrounding communities, showing a population of a million and a quarter, where through a group of substations service is made to the infinitude of connections involved.

To patrol these lines, doing constant inspection and maintenance, transporting the necessary men, tools, materials and equipment for service or new construction, and assisting with the handling of mechanical equipment or material, is the prescribed function of the MLH&P 90-truck fleet.

The arch enemy to be fought is Nature, in her vagrant moods. Wind, electrical storms, ice, sleet and fire play havoc with overhead power transmission lines. It is therefore at once obvious that straight telephone service could not meet the power company's need—the same weather or atmospheric conditions that would put a power line out of operation also killed the telephone line. High induced voltages would play havoc with the low-voltage telephone line, so that just at the time when the communication system was most urgently needed it would fail.

As is commonly known, high frequency radio waves are used to skip distances without the use of wires.

ANNUAL SUMMARY OF CALLS AND ANSWERS

M.L.H.&P. CONS. SERVICE DEPARTMENT
RADIO STATION C-Y-5-Y

YEAR 1940

CAR Nº	NAME	JAN.	FEB.	MCH.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	TOTAL CALLS	TOTAL ANS.	% ANS'D	PER DEPARTMENT CALLS	PER DEPARTMENT ANS	PER DEPARTMENT % ANS'D
57	L.B.TEMPLE	4	6	6	12	11	15	19	15	9	16	14	9	162	129	90.8			
41	G.BODE	3	3	4	2	1	4	7	4	2	1	1	3	37	31	83.1			
26	POWER INSPECTOR	9	13	25	16	12	3	9	10	7	15	4	10	135	124	91.8	ELEC. DIST. EMERGENCY DIVISION 29.9% OF TOTAL CALLS		
43	POWER INSPECTOR	12	20	18	9	10	11	17	6	8	8	8	2	129	115	89.1			
109	EMERGENCY CAR	9	8	28	15	11	17	18	6	10	11	12	9	154	146	96.1			
110	EMERGENCY CAR	7	4	29	16	10	20	15	11	10	11	11	11	155	145	94.7			
137	EMERGENCY CAR	11	4	24	22	8	18	33	10	15	9	9	6	169	156	92.3			
9	J.R.ROBERTSON	-	-	-	-	4	5	4	2	5	2	2	1	31	28	90.3			
45	G.GUILBAULT	6	5	8	4	6	5	4	3	7	5	10	2	65	58	89.2	ELEC. DIST. UNDERGROUND DIVISION 5.0% OF TOTAL CALLS		
114	UNDERGROUND TRUCK J.JOURNAULT	0	1	1	5	6	3	5	2	0	1	1	3	28	25	89.2			
218	UNDERGROUND TRUCK A.BOUCHARD	-	-	-	-	0	3	4	3	2	4	1	1	21	20	95.2			
221	UNDERGROUND TRUCK H.WESTON	-	-	-	-	2	3	2	3	4	1	1	1	18	18	100			
93	F.BOURBONNAIS	1	0	12	5	10	11	14	12	4	6	6	5	86	83	96.6			
128	A.BILODEAU	5	3	1	11	23	10	14	6	11	10	6	5	105	102	97.1			
64	LINE TRUCK R.THIBAULT	5	3	0	2	6	4	6	5	7	11	2	6	57	55	100	ELEC. DIST. OVERHEAD LINES DIVISION 17.9% OF TOTAL CALLS		
70	LINE TRUCK E.SANSCHAGRIN	5	0	0	3	2	4	6	4	0	5	4	2	39	39	100.			
158	LINE TRUCK J.TRUDEAU	2	2	7	3	7	10	6	7	5	6	9	5	69	68	98.5			
213	CONNECTION TRUCK E.PEPIN	2	2	2	10	13	10	8	8	7	5	5	4	86	82	97.6			
214	CONNECTION TRUCK E.BOUCHARD	-	-	-	-	-	-	-	1	6	8	4	12	35	35	100.			
215	CONNECTION TRUCK J.PLANTE	3	3	4	7	2	7	10	6	3	6	11	4	72	69	95.8	548	536	97.8
136	R.M.GREGOR	1	0	5	3	8	2	5	4	1	1	2	2	36	36	100.	ELEC. DIST. TESTING DIV. 5.6% OF TOTAL CALLS		
127	TESTING CAR	-	-	-	-	5	7	16	19	0	2	6	7	67	63	97.0			
134	TESTING CAR	-	-	-	-	12	10	5	8	2	6	3	8	70	63	90.0	173	164	94.7
91	J.R.COY	1	0	0	0	0	1	0	0	0	0	1	0	3	3	100			
69	L.H.MARROTTE	-	-	-	-	-	-	-	-	-	-	1	0	1	1	100	ELEC. STATIONS AND ENGINEERING 1.4% OF TOTAL CALLS		
20	TRANSMISSION TRUCK R.TONKIN	4	1	3	2	2	2	3	2	1	1	0	0	21	19	90.4			
162	TRANSMISSION TRUCK M.BOURNE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.			
146	H.HABERL	1	0	1	2	1	2	6	2	0	0	2	0	17	16	94.1			
														ELECTRICAL DEPT. 59.9% OF TOTAL CALLS			1836	1726	94.0
27	A.LABELLE	6	10	14	10	14	7	3	6	4	5	11	4	94	85	90.4			
81	SPARE	6	8	11	10	14	7	2	6	4	5	9	5	87	65	74.7			
102	E.QUIGG	3	2	1	0	0	0	0	0	0	0	0	0	6	5	83.3			
113	A.DUBOIS	5	18	7	11	16	4	5	3	5	1	5	7	87	83	95.4	FITTING DEPT. 27.1% OF TOTAL CALLS		
116	W.ADAMS	6	10	13	15	25	4	4	5	5	6	3	6	99	93	93.9			
119	A.OWDEN	8	14	11	10	15	4	3	6	9	7	10	7	108	95	87.9			
121	A.CORBEIL	13	13	14	16	8	5	4	3	9	4	8	6	116	105	90.5			
124	D.BAIN	17	15	11	19	20	7	7	7	2	5	4	9	131	123	93.8			
141	A.HOOPER	7	7	5	16	17	6	1	7	4	10	5	5	94	88	93.6			
36	GAS EMERGENCY CAR	10	8	8	7	15	11	5	8	7	9	3	5	97	83	89.2	828	760	91.7
		23	34	44	32	29	14	11	11	1	7	0	22	232	227	97.8	GAS DISTRIBUTION 12.7% OF TOTAL CALLS		
120	J.MALARIA	8	5	10	12	9	11	7	4	12	9	3	6	96	93	95.8			
126	R.O'BRIEN	-	-	-	-	3	8	8	4	2	14	5	15	62	61	98.3	391	381	97.4
														GAS DEPARTMENT 39.7% OF TOTAL CALLS			1219	1141	93.6
42	SPARE TRUCK													0	0		GARAGE 0.4% OF TOTAL CALLS		
103	SPARE TRUCK	-	-	-	-	-	2	1	4	2	0	1	0	11	11	100.			
TOTAL CALLS	PREVIOUS YEAR	194	212	326	340	352	281	301	211	219	209	210	211	3066	2878	93.8	3066	2878	
TOTAL ANSWERS	PREVIOUS YEAR	179	194	311	316	334	260	286	207	205	198	189	191						
% OF ANSWERS TO CALLS	PREVIOUS YEAR	92.2	91.5	95.3	92.9	94.88	95.3	95.01	98.1	93.15	94.73	90.0	90.5						
AVERAGE TIME TAKEN FOR ANSWERS (MINUTES)	PREVIOUS YEAR	6.5	5.9	5.2	5.04	6.4	5.8	5.5	6.8	6.1	7.2	7.5	5.9						
TRANSMISSIONS	PREVIOUS YEAR	711	771	883	1003	961	776	836	707	638	686	666	571	9209			AVERAGE PER DAY 25.16	AVERAGE TIME TAKEN FOR RESPONSE (in minutes) 6.1	

NOTE: * CALL FOR WHICH NO ANSWER WAS RECORDED, REPRESENTS ONLY THAT A SPECIFIED CAR FAILED TO ANSWER.

TABULATED BY J.D.Allmas Jr. CHIEF CLERK

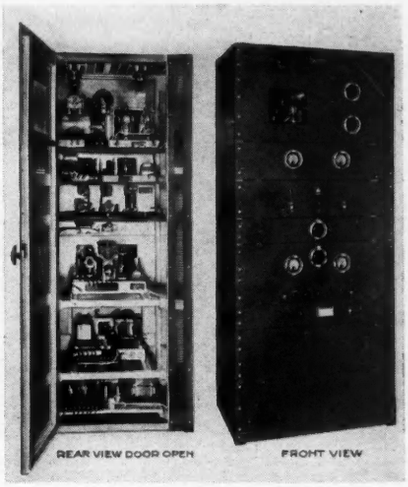
APPROVED S.E.Lemaire MANAGER SERVICE DEPARTMENT

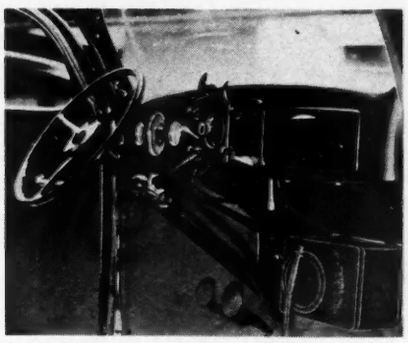
AVERAGE TIME TAKEN FOR ANSWERS

	PER CAR CALLS COUNTED	PER CAR MINUTES	PER CAR AVERAGE MINUTES	PER DEPARTMENT CALLS COUNTED	PER DEPARTMENT MINUTES	PER DEPARTMENT AVERAGE MINUTES
ELEC. DIST. EMERGENCY DIVISION	109	309	2.8			
	29	93	3.2			
	116	642	5.5			
	112	632	5.6			
	144	312	2.1			
	142	464	3.2			
	155	304	1.9	807	2758	3.4
ELEC. DIST. UNDERGROUND DIVISION	18	213	11.8			
	40	423	10.5			
	24	91	3.7			
	19	55	2.8			
	16	156	8.6	119	938	7.8
ELEC. DIST. OVERHEAD LINES DIVISION	76	737	9.6			
	96	380	3.9			
	53	286	5.3			
	38	289	7.6			
	68	464	6.8			
	80	843	10.5			
	35	287	8.2			
	69	710	10.2	515	3995	7.7
ELEC. DIST. TESTING DIVISION	34	119	3.5			
	62	246	3.9			
	63	335	5.3	159	700	4.4
ELEC. STATIONS AND ENGINEERING	3	27	9.0			
	1	11	11.0			
	19	80	4.2			
	0	0	0.			
	13	13	1.0	36	131	3.6
	ELECTRICAL DEPT.			1636	8523	5.2
FITTING DEPT.	85	743	8.7			
	5	38	7.6			
	79	619	7.8			
	89	511	5.7			
	94	798	8.4			
	101	721	7.1			
	122	1246	10.1			
	83	685	8.2			
	82	572	6.9	740	5927	8.0
GAS DISTRIBUTION	213	997	4.6			
	91	1031	11.3			
	60	309	5.1	364	2337	6.4
	GAS DEPARTMENT			1104	8264	7.4
GARAGE	0	0	0			
	10	35	3.5	10	35	3.5
	2750	6822	6.1	2750	6822	6.1

calls counted for time 2750
" not counted 128*
" not answered 188
TOTAL CALLS 3066

* calls to report at convenience etc.





Left: Chart shows breakdown by truck and department of 9209 transmissions during 1940. Above: Details of 400-watt transmitter and a receiver.

Ordinarily these waves are allowed to go where they will—literally "broadcast." Sometimes they are directed along a certain narrow channel; "beam wireless." In addition, the waves may be guided to a certain point along wires or transmission lines; this is "carrier current" transmission.

As far back as 1932, MLH&P had begun to make use of the radio-telephone, using carrier current radio messages directed over high-tension transmission lines to outlying points. With this method the transmitting unit takes the voice at normal level, amplifies it many times and delivers it to the radio frequency output tubes. These send it out along the antenna that parallels the transmission cable for some distance. Then it jumps to the transmission line, runs along that for several miles, jumps off to another antenna and is filtered and received at the other end of the line.

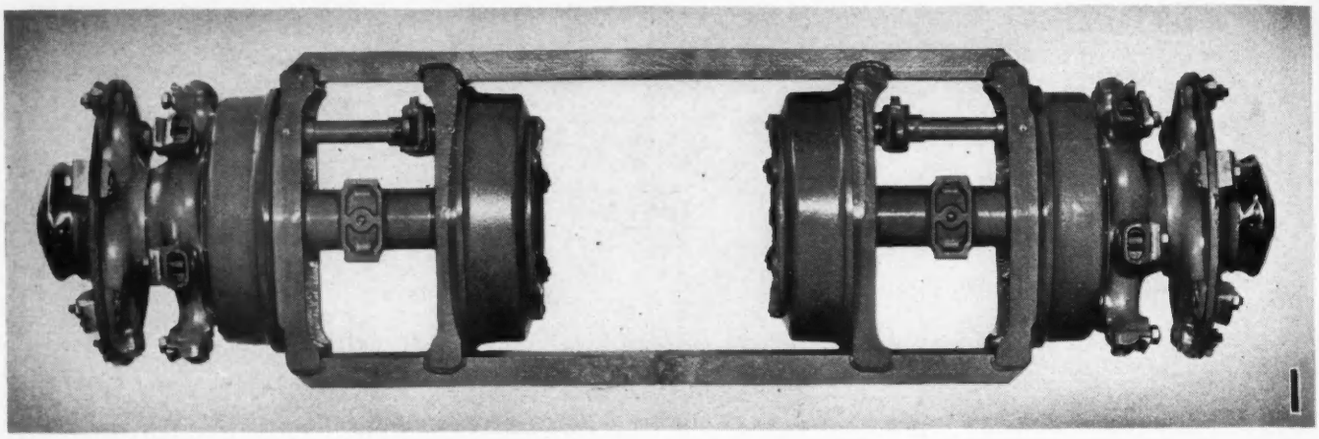
Unfortunately these radio frequency waves thus superimposed upon the normal sixty-cycle line have a bad habit of hopping off every time they get a chance, and leaking into the ground. They leave the transmitting set with 15 watts of power, but they arrive at the other end with about .01 of that amount. Thus the receiving set must amplify the signal to bring it back to voice level.

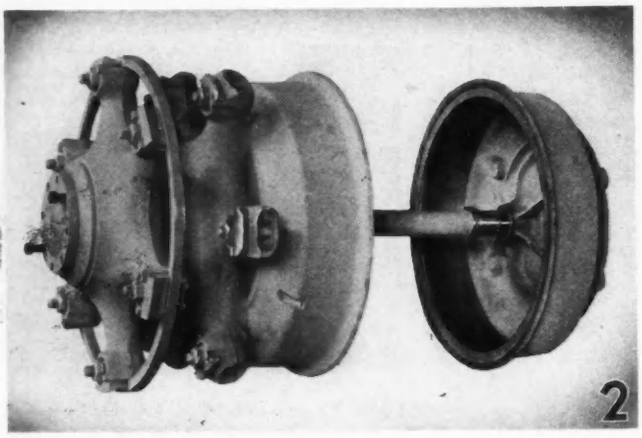
The method has worked well; even in lightning storms the sets have operated with little interference. At least in part the company's communications difficulties seemed solved.

The next problem in line for consideration was that of contacting maintenance or emergency cars or trucks after they had left their headquarters. With MLH&P this became increasingly urgent as its power system grew, in step with the rapid growth of Montreal.

Following its experience with carrier current, the company began experimenting with short-wave radio for these communications between headquarters and the trucks of the trouble crews. Finally, radio was adopted for this purpose as offering

(TURN TO PAGE 78, PLEASE)





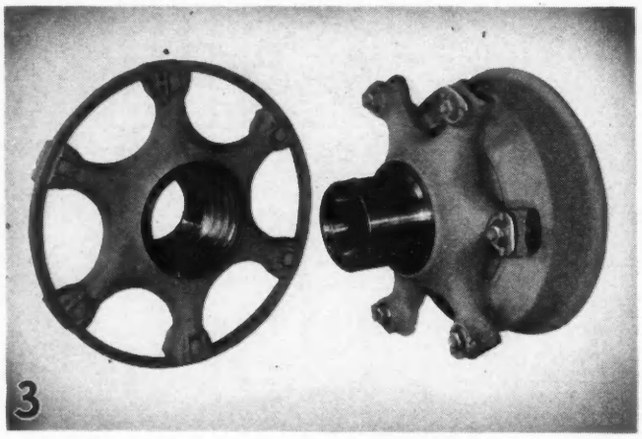


Fig. 1—The complete axle assembly, described in full below

Figs. 2, 3—Wheel and drum sub-assemblies, details below

"EASY ROLL" TRAILER AXLE

Clark unit has four brakes on independently rotating wheels

A STRIKING innovation in equipment for heavy-duty vehicles is the "Easy Roll" dual-tired trailer axle recently placed in production by the Clark Equipment Co., Buchanan, Mich. Basic features of the new axle include:

(a) Independently rotating wheels
(b) Four sets of brakes—an individual brake assembly for each wheel.

Reference to the general view of the complete assembly (Fig. 1) shows the independently-mounted outer wheel spiders and the four sets of brake assemblies—one pair for the inner wheels, attached directly to the spider, while the inner pair connects to the outer wheel spiders through torque shafts. The overall length of the unit is controlled only by the spring centers and tire spacing, since this axle design is free of the usual handicap of wide brake drums which must be fitted between the spring and wheels.

For the intimate details of construction we refer you to Fig. 2. It will be noted that the inner wheel spider is provided with a hub and brake drum mounted in the conventional manner. The outer spider, on the other hand, has a special plain hub, fitted with a bushing, permitting it to rotate freely on the outer machined surface of the inner wheel hub. (Fig. 3.) Normally the two spiders turn together on the anti-fric-

(Turn to Page 86, Please)

SERVICING
IS SERVICE TO THE NATION—AS TRULY AS ARMS BUILDING

THE life-stream of America rolls along on wheels . . . and those wheels must not stop.

★Food and firearms, clothes and castings, must have truck transport at full efficiency and in greater volume.

★Vast daily movements of bus-riding workers must be unfailing and safe.

★And the ebb and flow of hundreds of thousands of cars between home and office or factory—between city and city—is enormously necessary.

Whoever serves that vital traffic life-stream serves America.

Defense-curtailed production of non-military vehicles *must* carry with it every encouragement to the automotive servicing industries—to avoid three positive hazards:

1—Street and highway safety demand vehicles maintained in safe condition

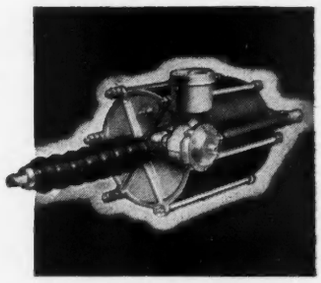
2—Hundreds of thousands of service men will be called upon to furnish service in ever-growing volume

3—America's gasoline and lubricant supply must not be squandered through the exhaust pipes of ailing engines

Bendix, as servant to the service industries, as well as first-flight producer for Uncle Sam, pledges its utmost aid to an intensified, nation-wide, automotive servicing program.

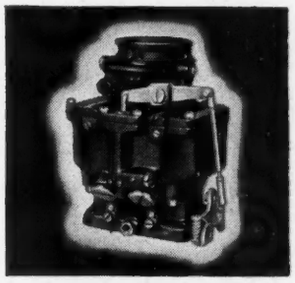
BENDIX PRODUCTS DIVISION
of Bendix Aviation Corporation
South Bend, Indiana

BENDIX
Products
have been made part and parcel of
MORE THAN 80 MILLION VEHICLES



Bendix B-K Power Braking

Overwhelming favorite, with every advantage of reliability, performance, long life. Only system providing everything Power Braking can offer. Millions of installations in use the world over.



Stromberg Carburetor

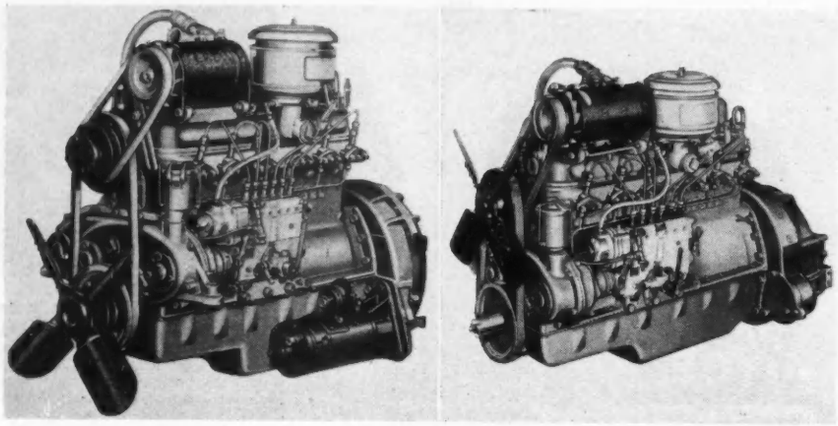
Pioneer of progress in carburetion—outstanding for its high efficiency, its many superiorities, its long life, its simple and sturdy construction and its stability and exceptional ease of adjustment.

Bendix Factory-Lined Brake Shoes

Brand-new satisfaction-insurance! Leading car manufacturers are urging their dealers to adopt it! It's simple and sure of correct results. Instead of relining brakes, you use brand-new *shoes, factory-lined and packed in certified sets for specific makes of popular cars!*

Bendix Cleaner

The new liquid grease-and-dirt-chaser for automotive service shops! Penetrates and lifts dirt and grease from metal parts 14 times faster than gasoline! Removes carbon, loosens paint and lacquer, without chemical action. *Can't hurt hands. Very long-lasting and extremely economical.*



Hercules 6-cyl. diesel adaptation for Ford, left; for Chevrolet, right

HERCULES 6-CYL. DIESELS FOR FORDS AND CHEVROLETS

HERCULES 6-cylinder diesel engines are now available for use in standard 1½-ton Ford and Chevrolet truck chasses. Hercules Motors Corp. now offers truck operators and fleet owners a 6-cylinder diesel engine in a complete "Power Package."

Two sizes of the 6-cylinder diesel are available for both Ford and Chevrolet trucks (conventional model only, in each instance) for the years 1940, 1941 and 1942. The engines are the well-known DJX Series of which thousands are in operation in trucks, buses and tractors. Fully engineered for ready application, the engines can be installed by any good mechanic and helper. The sizes of the two engines are Model DJXB, 3½ in. x 4½ in., and Model DJXC, 3¾ in. x 4½ in. The larger size is for use where operating conditions call for special transmissions, special axles, tires, etc.

Experience with the 4-cylinder Power Package Diesel has clearly demonstrated that any competent operator of a gasoline-powered truck can easily handle a diesel-equipped Ford or Chevrolet. Gear shifting is unchanged. The engine is started electrically. Speed is controlled by a foot accelerator. A slight pull on the handle on the dash stops the engine when desired.

In addition to the very important fuel economies made possible through diesel operation, owners report less frequent gear shifting and an abundance of "lugging power" when needed, due, of course, to the excellent torque characteristics of the modern diesel engine. Reduction of fire hazard and increased operating radius of the diesel-equipped vehicle, with no greater tank capacity, are additional advantages.

The 6-cylinder engines will be marketed through the Hercules distributor organization originally organized to handle the distribution of the 4-cylinder Hercules diesel Power Package units, as well as through Ford and Chevrolet dealers.

KINGHAM'S PLYMETL VAN BODY

THE Kingham Trailer Co., Louisville, Ky., is now marketing a new trailer van body known as the Kingham Universal Plymetl Body. It is said to be the first body on the market with no bolt heads showing.

Plymetl, the material from which the panels of the new body is made, is a water-proof bonded plywood with a highly rust resisting steel face. It is nationally known for its extremely light weight, its strength and is durability.

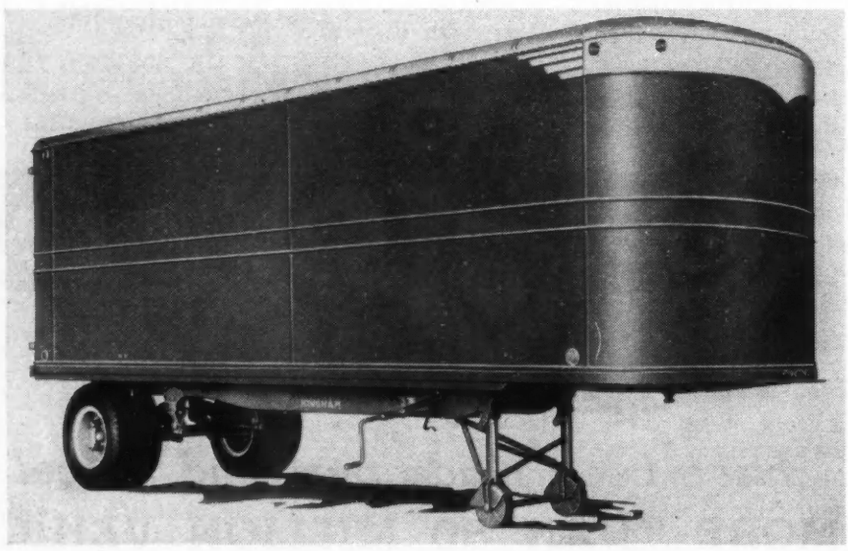
The side and front end panels of the Plymetl body are exceptionally strong and perfectly smooth. Added strength is given the front end panels when formed. This additional front end strength is a feature.

The panels are securely bolted to upright high tensile steel stakes. This type of construction eliminates rattles and other unnecessary noises. The new type of molding which covers all joints and bolt heads adds greatly to the appearance of the unit.

Because Plymetl is a semi-insulation, the Plymetl body is considerably cooler than the all-steel type.

Steel roof bows and steel trim channels with double lapped joints insure added strength with no leakage.

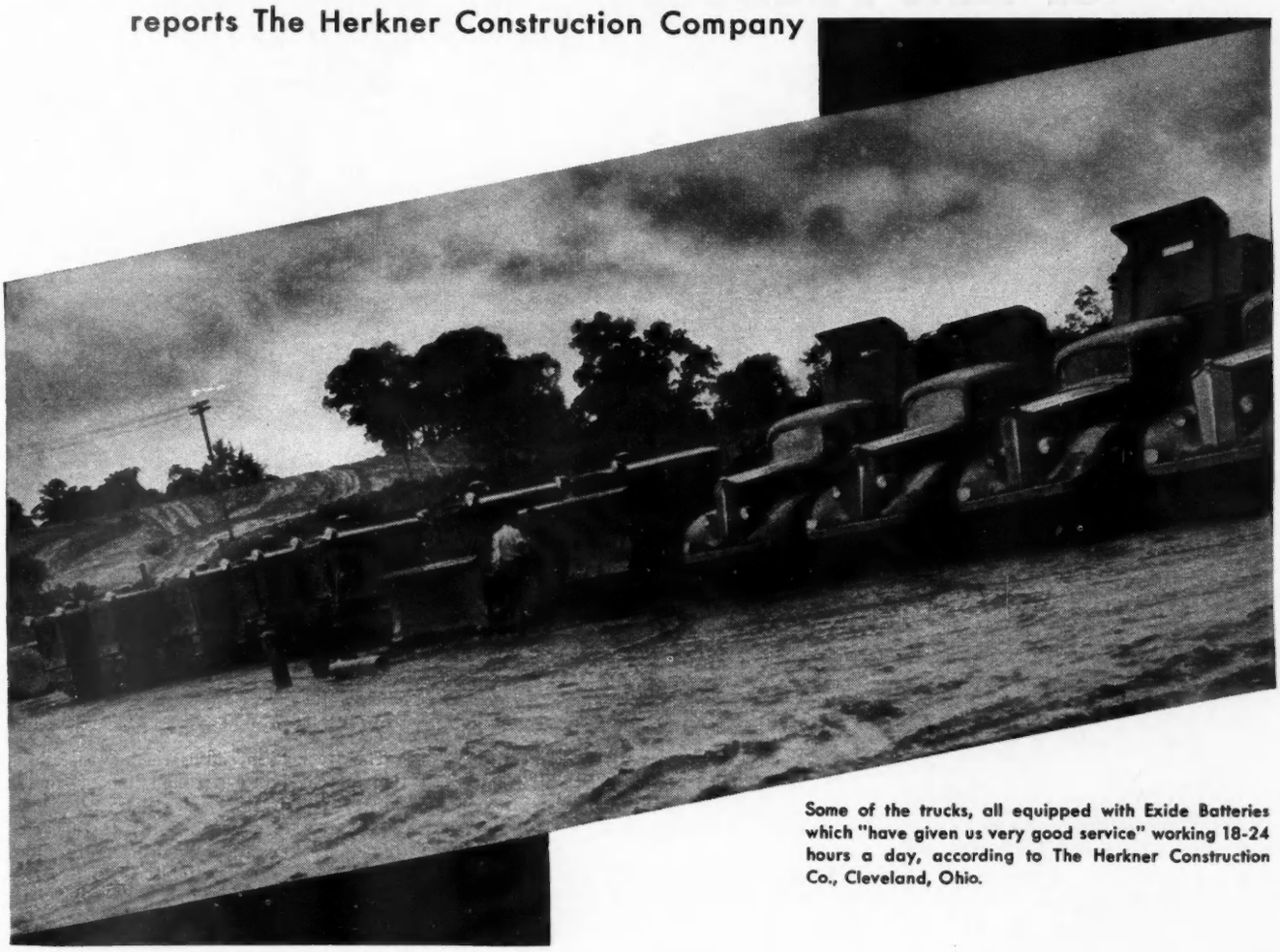
The standard inside width of the Plymetl body is 90 in. between lining. The height at the side panel is 6 ft. 10½ in. Length is from 18 ft. up in any even number of feet.



Exides help excavate 1,000,000 cubic yards of dirt...

"with a minimum amount of battery trouble"...

reports The Herkner Construction Company



Some of the trucks, all equipped with Exide Batteries which "have given us very good service" working 18-24 hours a day, according to The Herkner Construction Co., Cleveland, Ohio.

THE Cloverleaf Project, Cuyahoga County, Ohio, involved construction on a grand scale. A national highway, U. S. 21, had to be relocated. The Cuyahoga River had to be straightened. Bridges had to be moved or widened . . . and new ones built.

On this Cloverleaf Project, "we excavated approximately one million cubic yards of dirt, at a total contract price of about $800,000.00," reports The Herkner Construction Co., Cleveland, Ohio. All of the trucks used on this job depended on Exide Batteries . . . "and went through two and three daily shifts with a minimum amount of battery trouble."

This excellent record with Exides was no surprise to Herkner officials, for they also state that Exide Batteries have given them "very good service" in their heavy construction equipment for a number of years.

Many fleet owners, construction companies, bus lines and others are equally enthusiastic about Exides. Some report mileage records up to 200,000 miles per battery. For Exides are today built to deliver an average of 25% longer life than even Exides ever gave before.

Whatever the size and make of your trucks, gasoline-powered or Diesel, you can cut *your* battery cost per mile the Exide way. See your local Exide Distributor today!

THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia

The World's Largest Manufacturers of Storage Batteries for Every Purpose

Exide Batteries of Canada, Limited, Toronto

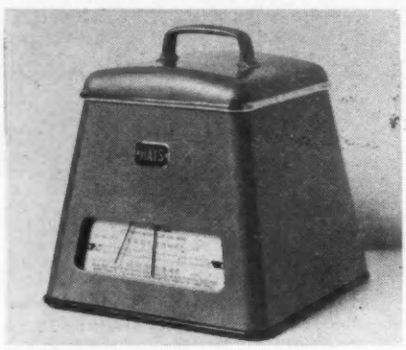
Exide

HEAVY DUTY TRUCK BATTERIES

SHOWCASE
OF NEW PRODUCTS

Hays Orsatomat

The Hays Corp. have a new gas exhaust analyzer which employs the Orsat principle of volumetric measurement and chemical absorption. A red pointer on the dial shows the amount of CO_2 and a black pointer shows the percentage of CO_2 plus O_2. The difference between the readings

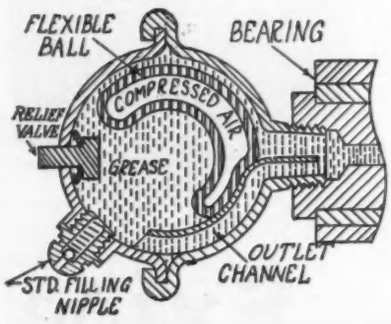


show the amount of oxygen. When there is a considerable amount of oxygen it is caused by faulty ignition. Thus the instrument distinguishes between faulty ignition and carburetion. It is distributed by C. A. Sprague, Devices, Michigan City, Ind.

Grease Cup

The Simplex Mfg. Co. of Detroit, Mich., announces important improvements in their 5000-mile reservoir grease cup for spindles, shackles, etc.

It is claimed that by incorporating a



simple relief valve it is now possible to see when the reservoir is full and impossible to blow it up by the use of the most powerful pressure grease gun, they also claim that an improvement in the neoprene ball makes possible the continuous lubrication of loose or worn bearings.

Fast Charger

The Mercury Corp., Kansas City, Mo., has added the new Mercury Cub "80" to its line of fast chargers. The new unit weighs only 58 lb. and has an 80-amp. capacity. A 1-hour time switch, voltmeter and desulphater unit are standard equipment. Dimensions are 15 in. by 12 in. by 11 in. This portable unit will charge 15 batteries at the conventional rate of 5 to 6 amps. The unit sells for $98.50.

Armored Clearance-Marker

The K-D Lamp Co., Cincinnati, announces a new armored clearance and side marker light that seems to be shock-proof.

The new light is so designed that blows from any angle glance off the heavy cast-metal housing. The housing and the lens are locked into one compact assembly so that the lens or the screws cannot drop out.

There is a separate steel back plate with fiber gasket which attaches to the truck

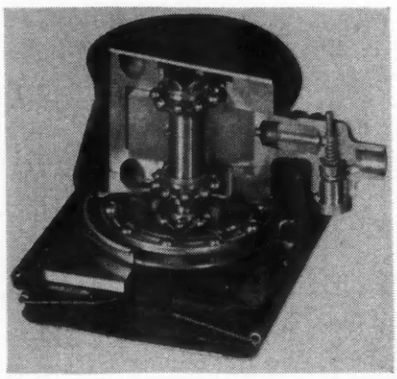
body. All of which makes it almost impossible to shear off the body of the lamp.

Further, the lamp has a Fresnel-type "lighthouse" lens which throws strong, glareless light ribbons, which are visible at any angle up to 180 deg. Due to the type lens, the lamp operates efficiently on a 1½ c.p. bulb.

Red or amber lenses available.

Air Sander

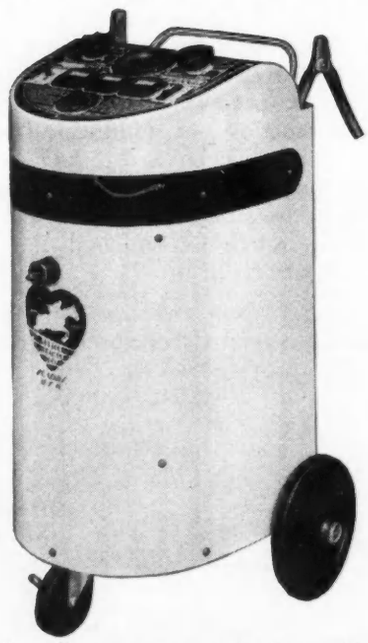
A handy maintenance tool is the Air Sander, a high-speed, non-stalling unit that is being manufactured by the National Air Sander, Inc., Rockford, Ill. It can be used for finish applications on metal, wood, leather, plastic and composition surfaces. With each tool is furnished two interchangeable pads for wet and dry sanding.



The sanding pad does not revolve, but moves in a circular path so that each grain of sand scribes a 3/16-in. circle. The quarters cut from the standard abrasive sheet fit the pad. The sander operates at 5000 cycles per min. at 50-60 lb. air pressure. Vibration is held to a minimum by incorporating in it a sturdy crankshaft and ball bearings. An oil-resisting rubber cover completely seals the motor and bearings.

Fast Charger

The Rocket Special is the newest addition to the Hunter-Hartman line of Rapid Battery Analyzers and Chargers. The Rocket operates on a 110 volt A.C., 60-cycle single-phase circuit, though machines for 220 volts are also available. The copper-oxide dry plate rectifier is cooled and controlled for maximum efficiency and long life. Rate of charge is 100 ampere.



A cooling system protects the machine by circulating 1000 cu. ft. of air per minute.

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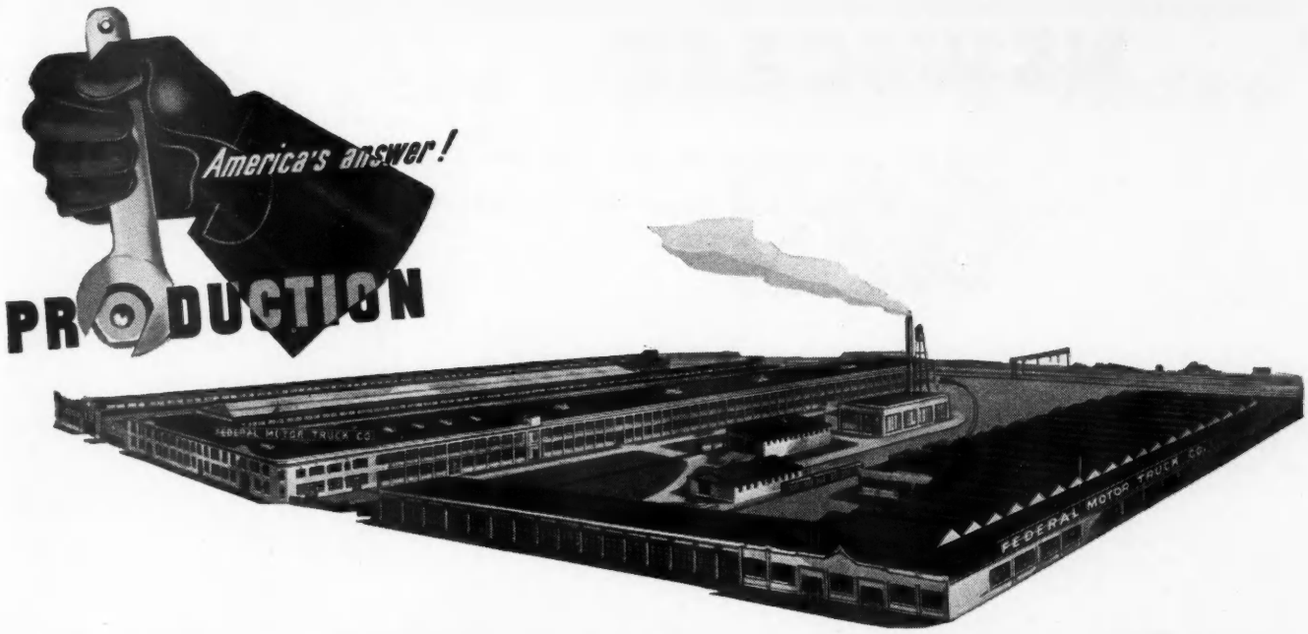
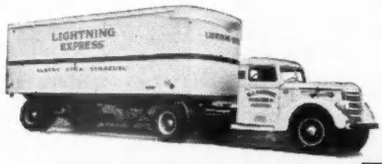


FEDERAL IS BUILDING MILLIONS OF DOLLARS OF DEFENSE TRUCKS FOR UNCLE SAM

MODEL 77, 1½—3-ton Cab-Over-Engine Federal with Concrete Mixer

MODEL 45, standard type Oil Tank Federal Truck



FEDERAL MODEL 29, Tractor Trailer. Used extensively for long-distance hauling

In serving the production demands of today's work fronts and war fronts, Federal is dedicated to the task not only of producing *more* trucks for the job ahead—but also of building in those trucks the performance factors so essential to *all-out* operation and service.

Volume alone is not enough. Precision, quality and vigilant inspection must be utilized to insure the greatest measure of operating reliability. Federal's large plant—devoted exclusively to truck manufacturing—is combined with an exceptionally high type of experienced personnel, long schooled in the importance of mechanical perfection.

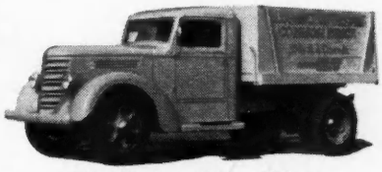
From light to highest tonnage capacity trucks, in standard, cab-over-engine and specially built jobs, Federal offers an outstanding brand of performance to meet and serve today's emergency—tomorrow's critical demands.

FEDERAL MOTOR TRUCK CO.
Detroit • Michigan

FEDERAL Trucks

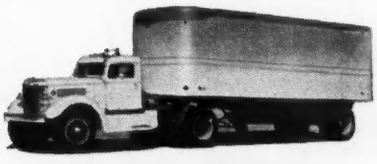
SINCE 1910

KNOWN IN EVERY COUNTRY • • SOLD ON EVERY CONTINENT



MODEL 16, 1½—2½-ton Federal. Used in brick haulage

MODEL 94, Cab-Over-Engine Federal Semi-Tractor Trailer. Short over-all length



FEDERAL MODEL 55, 5—6½ ton tractor with standard cab and semi-trailer

QUALITY TRUCKS AT PRODUCTION PRICES

NEWSCAST

Liberty Aircraft Products Buys Autocar

The Liberty Aircraft Products Corp. has completed arrangements for the purchase of 121,097 shares of common stock of the Autocar Co. from Phoenix Securities Corp. This purchase represents control of the Autocar Co. since it is approximately 66 per cent of the outstanding stock.

Governor Vetoes Pennsylvania's "690"

Governor James of Pennsylvania vetoed Bill HB-690 after it had been passed by the Legislature. The bill would have permitted 42,000 lb. g.v.w. for a tractor-trailer instead of the 39,000 lb. allowed by law at present. He was roundly condemned by the executive committee of the Pennsylvania Motor Truck Association who called a mass meeting of truckers from all over the state to map plans for breaking down Pennsylvania's trade barrier against highway transportation.

Rawson Goes To Army

C. B. Rawson, managing editor of COMMERCIAL CAR JOURNAL and first lieutenant in the Field Artillery Reserve, has been called into service and assigned to the Air Corps, Maxwell Field, Montgomery, Ala.

Chattanooga City Tax

A new tax bill that would levy from $10 to $130 per truck for the use of the city streets passed the first reading by the City Commission of Chattanooga, Tenn. Legislative authority was granted by the 1941 Tennessee general assembly to make this bill possible.

TRUCK PRODUCTION
(U. S. and Canada)

	1941	1940	Per Cent Change
January*	100,835	74,016	+35.0
February*	104,166	71,690	+45.5
March*	111,560	75,285	+48.1
April*	102,784	76,807	+33.9
May*	117,795	74,139	+58.8
June	118,753	67,787	+75.2
6 Months	655,893	439,724	+49.0
July	.....	74,005	.....
August	.....	41,533	.....
September	.....	56,703	.....
October	.....	86,104	.....
November	.....	93,068	.....
December	.....	98,747	.....
Total	.....	889,884	.....

*1941 data revised.

Transportation Board Okayed

Presidential nominees to the Transportation Board, Nelson Lee Smith, C. E. Childe and Robert E. Webb were confirmed by the U. S. Senate. No chairman was appointed and $100,000 was appropriated to finance the Board's activities.

IHC Appointments

J. H. Kline has been appointed manager of International Truck branches in metropolitan New York, succeeding F. J. Harmon, who died on July 12 at New York. Mr. Kline was branch manager at West Haven, Conn. This position has been filled by John Hurst, transferred from the Philadelphia branch.

Clark's New Job Is Democratic City Chairman

James P. Clark, a leading figure in Pennsylvania trucking circles, has been appointed chairman of the Democratic City

Committee of Philadelphia, Pa. Mr. Clark is president of Horlacher Delivery Service, Inc.

API Automotive Transportation Committees Appointed for 1941

Three 1941 standing committees of the American Petroleum Institute's Control Committee on Automotive Transportation, covering operations and bulk hauling, engineering, and regulations, have been appointed. Chairmen of these committees, respectively, are: H. E. Spear, Refiners Transport & Terminal Co., Detroit; H. A. McKim, Standard Oil Co. of California, San Francisco; and J. F. Winchester, Standard Oil Co. of N. J., New York.

Members of the Committee on Operations and Bulk Hauling are: L. A. Carlson, Gulf Oil Corp., Pittsburgh; E. M. Fitz, Shell Oil Co., Inc., San Francisco; O. H. Gundlach, Sinclair Refining Co., New York; E. W. Jarvis, Standard Oil Co., Louisville, Ky.; Oscar Lynch, Humble Oil & Refining Co., Houston, Texas, and T. D. Preble, Tide Water Associated Oil Co., New York.

Members of the Committee on Engineering are: Frederick B. Hufnagle, Jr., Sun Oil Co., Philadelphia; M. E. Nuttila, Cities Service Oil Co., New York; J. J. Powelson, Standard Oil Co. of N. J., New York; T. D. Preble, Tide Water Associated Oil Co., New York; J. W. Sinclair, Union Oil Co., Los Angeles, and R. J. Whitley, Socony-Vacuum Oil Co., Inc., New York.

Members of the Committee on Regulations are: J. C. Bennett, Tide Water Associated Oil Co., San Francisco; C. J. Foster, Deep Rock Oil Corp., Chicago, and R. E. Looby, American Oil Co., Baltimore.

(TURN TO PAGE 48, PLEASE)

New Truck Registrations by Makes by Months*

	Auto-car	Brock-way	Chev-rolet	Diam-ond T	Dodge	Fed-eral	Ford	G.M.C.	Hud-son	Inter-nat'l	Mack	Ply-mouth	Reo	Ster-ling	Stude-baker	White	Willys	Misc.	Total
January 1941	189	155	15,801	447	4,496	120	15,797	3,388	65	7,445	673	886	79	34	231	662	82	300	50,830
January 1940	139	117	15,574	535	4,343	152	13,222	3,046	56	5,480	571	718	11	22	85	433	173	326	45,003
February 1941	139	128	15,778	436	4,141	136	16,531	3,118	63	6,992	532	747	90	35	231	658	82	287	50,124
February 1940	94	92	13,789	425	4,338	113	11,960	2,638	60	4,981	425	767	4	31	101	380	182	351	40,729
March 1941	215	175	21,053	583	5,354	112	18,662	3,950	85	8,504	796	1,023	138	33	383	802	168	377	62,413
March 1940	136	123	17,792	573	5,355	161	14,962	3,444	76	6,897	533	949	6	24	154	556	233	316	52,290
April 1941	250	229	22,497	701	6,038	137	16,789	4,267	94	9,129	931	1,041	154	48	475	918	186	352	64,236
April 1940	154	102	18,996	563	5,650	152	15,416	3,503	91	7,027	655	1,070	7	35	133	763	222	307	54,846
May 1941	228	244	22,332	561	6,012	156	17,290	4,224	84	9,023	903	1,066	157	43	434	811	252	357	64,177
May 1940	156	143	16,735	501	5,453	151	13,769	3,704	92	6,715	756	1,084	6	25	112	562	225	374	50,543
June 1941	237	179	21,722	507	5,951	114	17,325	3,800	86	8,580	851	904	135	32	456	835	214	337	62,265
June 1940	126	121	13,835	533	4,374	116	11,599	2,953	67	6,239	560	902	20	30	103	558	188	209	42,533
Six Months 1941	1,258	1,110	119,183	3,235	31,992	775	102,394	22,747	477	49,673	4,686	5,647	753	225	2,210	4,686	984	2,010	354,045
Six Months 1940	805	698	96,721	3,130	29,511	845	80,928	19,288	442	37,339	3,500	5,470	54	167	688	3,252	1,223	1,883	285,944
% Change...6 Months	+56	+59	+23	+3	+8	−8	+27	+18	+8	+33	+34	+3	+1,294	+35	+221	+44	−19	+7	+24

* Does not include Federal Deliveries for either 1941 or 1940.

Merkel's Lube Troubles Are Ended

No gum, no sludge, no varnish, no corrosion, no excessive wear since Long Island packer changed to Lubri-Zol

• Mr. A. Ginocchio, manager of the 50-truck fleet of Merkel, Inc., meat packers of Jamaica, Long Island, writes:

"Our motors, crankcases and gear cases stay exceptionally clean since we started using Lubri-Zol lubricants. Our recent yearly inspection showed that in trucks where we have never used anything but Lubri-Zol E. P. Gear Lube, gears and bearings showed no evidence of wear or corrosion.

"Engine wear in trucks using Lubri-Zol Motor Oil is approximately 30% less than formerly. We have no trouble with sludge or gum and have eliminated our former varnish and corrosion problem. In short, Lubri-Zol has lived up to all the claims made for it."

You, too, should be interested in Lubri-Zol protection for your trucks and cars. Our fleet engineer is at your service and full information will be sent promptly at your request. Write us today.

THE LUBRI-ZOL CORPORATION, Cleveland, Ohio

Let these 5 unique Lubri-Zol features help solve your lubrication problems, too

Oxidation stability — retards the formation of sludge and gum in oils.

Greater film strength— guards against metal to metal contact and wear.

Increased oiliness—means reduced friction and improved lubrication.

Gum solvent action—cuts sludge and attacks carbon deposits.

High viscosity index—insures both easy starting and correct operating viscosity.

Buy your oil on the cost per mile.. and save.. with

LUBRI

REG. U.S. PAT. OFF.

ZOL

NEWSCAST

(CONTINUED FROM PAGE 46)

Survey On Defense Deliverey By NRDGA

The National Retail Dry Goods Association is conducting a survey among its members to determine what arrangements they are making to relieve the disturbed delivery situation resulting from the present emergency. The Association is aware that some of its members have taken steps individually and collectively but wishes to make a complete summary believing that it will serve as a guide in conforming with the emergency program and still maintain adequate delivery.

Gasoline Shortage Temporary According to API

The American Petroleum Institute reports that pipe line construction already started and scheduled for completion in 8 months will provide the equivalent in transportation facilities of 80 tank ships. This together with 27 tank ships scheduled for completion this year would relieve any shortage along the eastern seaboard.

The Texas to New York pipeline would be the equivalent of 65 ships while the line from Louisiana to North Carolina would release 10 tankers. The pipe line from Florida to Tennessee would release two tankers and the Portland-Montreal pipe line would replace at least three tankers.

Facts and Figures

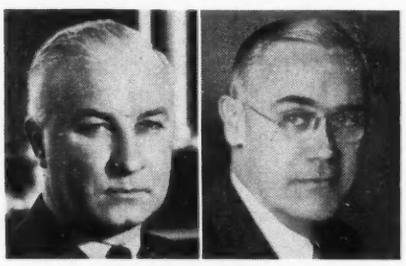
The Automobile Manufacturers Association has published the 23rd edition of Facts and Figures, its annual statistical record of the automotive industry. This 1941 version gives data on the extent of defense work being done by the industry in addition to the regular commercial information.

Hobart Conducts Welding Contest

Cash prizes totaling $200 or more are being offered every month for interesting news items about arc welding applications in a contest sponsored by Hobart Brothers Co., Troy, Ohio. Besides the regular prizes which range from $100 for first to $10 for fifth, special awards will be made for entries which find favor with the judges. Official entry blanks and contest rules may be obtained by writing the Contest Manager, Hobart Brothers Co.

Sealed Power Adds Two Directors

At the annual meeting of stockholders the Sealed Power Corp., Muskegon, Mich., elected two new directors to the board. Mr. A. W. Lines, president of the Accuralite



A. W. Lines — Lester Mathews

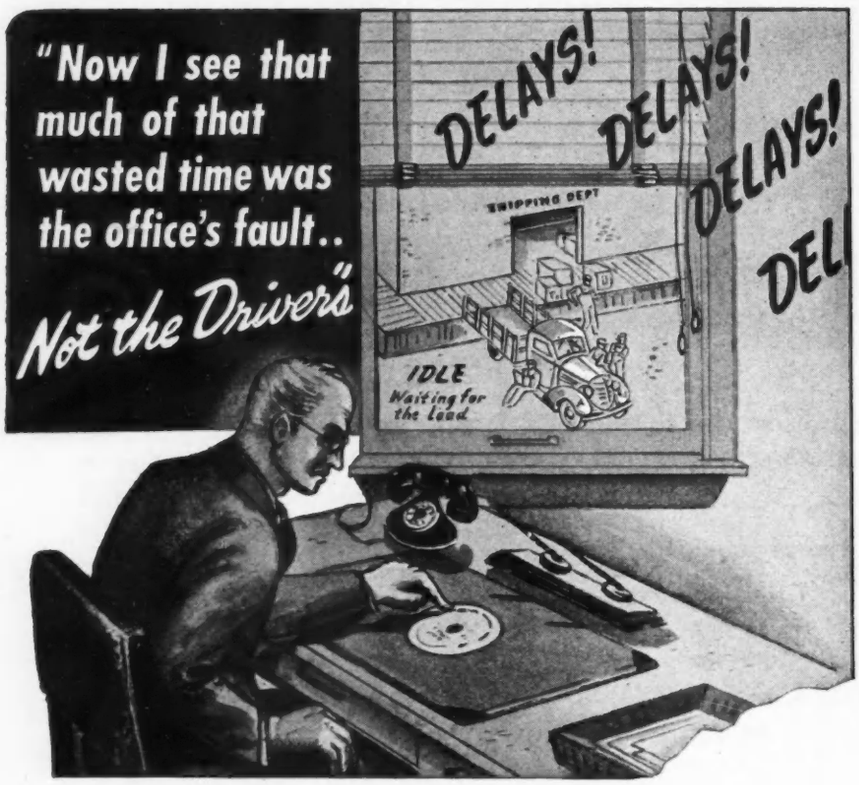
Co., a division of Sealed Power Corp., was elected along with Lester Mathews, credit manager and assistant treasurer of Sealed Power.

Pierson Promoted

The International Harvester Co. has announced the appointment of L. W. Pierson, formerly manager at the Milwaukee motor truck branch as central district manager in charge of motor trucks.

Osborn Goes To Timken

Paul V. Osborn, former vice-president and general manager of the Carrier Mfg. Corp. has joined the Timken Detroit Axle Co., as assistant to the vice-president.



A Truck's Time Is Expensive!

● This man is putting his finger on delays. (They all show up on the chart, taken from a *Servis Recorder.*) Here's half an hour standing time, here 20 minutes, here nearly an hour! He checks into these delays—and often finds that the

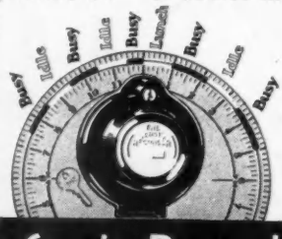
Driver's Not to Blame!

Here's a truck waiting for its load for 2 *hours,* at a cost of $2 or $3 an hour! Here's a truck with a short afternoon route, getting in at 3:30 and nothing more to do until closing time.

Here's a truck held up at the freight station, which could be corrected; here's a truck bucking the rush hour traffic unnecessarily; here's a truck that's overworked, causing costly overtime!

Time! Time! Time!

It's all a problem in TIME—and of course the *Servis Recorder* gives you all this busy-idle information, on its chart, at a glance.



Write for free booklet: "Ten Ways of Getting More Work Out of Motor Trucks."

The SERVICE RECORDER Co.
1375 Euclid Ave., Cleveland, O.

The Servis Recorder
The Good Driver's Best Friend

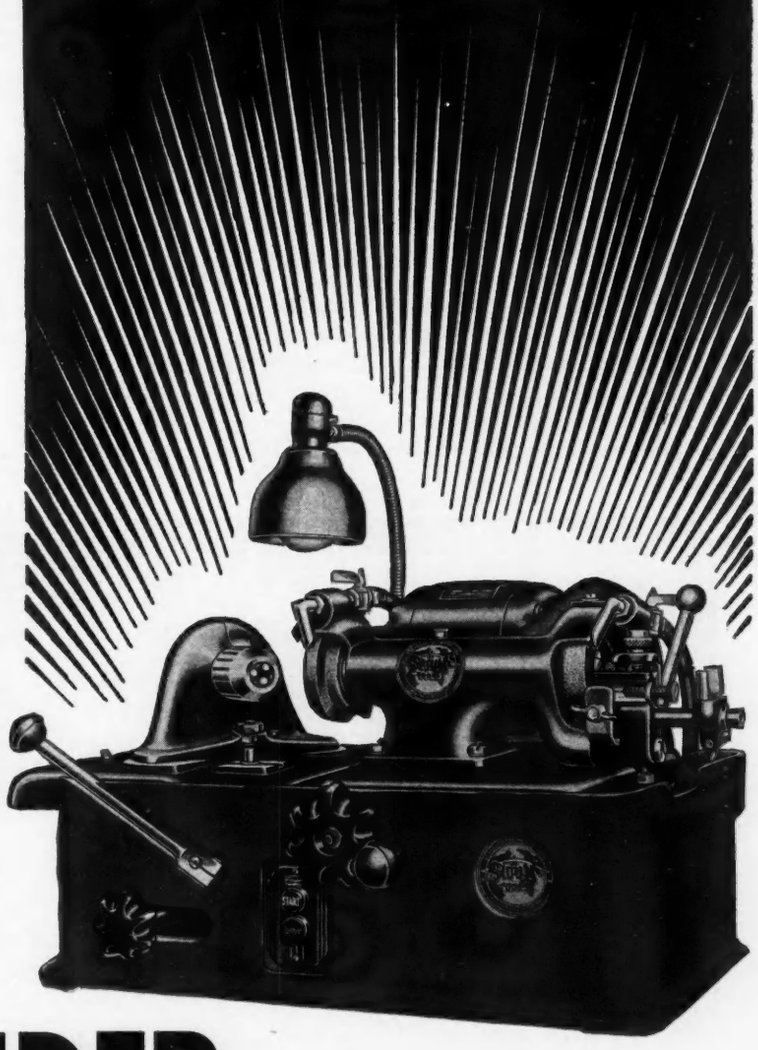
From now on — your income will depend more than ever on reconditioning SERVICE. Yet, fewer good mechanics are available. How important it is, then, to have tools that increase the efficiency and production capacity of your skilled men.

For wet grinding valves, Ford valve tappets and valve stem ends — with factory precision and finest finish. A demonstration will prove that the SIOUX WET GRINDER is the smoothest, fastest, most compact, most complete and efficient machine of its kind yet developed. It eliminates heat and distortion and reduces wheel dressing to a minimum. Chucking capacity 1/4" to 5/8" diameter.

Number 655 includes resilient-mounted 1/3 H.P. motor, positive and smooth Vee Belt Drive, automatic chuck stop, ball-bearing grinding head, 3-quart coolant tank, perfected Sioux Roller Chucking System and other equipment.

ASK YOUR JOBBER'S SALESMAN!

for that extra capacity you need so much NOW!



SIOUX

Valve Face Grinding Machine

Built in WET GRINDER

STANDARD THE WORLD OVER

ALBERTSON & CO., INC. SIOUX CITY, IOWA, U. S. A.

FOR LOOKS KRUG'S LIKES LACQUER

(CONTINUED FROM PAGE 33)

think it's tough meeting Krug's beauty standards, try tying that record! These records are all the more interesting in view of the fact more than 90 per cent of the vehicles are on the street every day.

With so many trucks in use, the paint shop foreman must move trucks out of his shop in rapid order. Under present schedules, trucks are held out of service only four days, during which time they receive a complete paint job. The shop turns out 16 to 17 vehicles weekly, of which about 10 are complete jobs and the remainder requiring varying degrees of retouching.

The high rate at which paint jobs are turned out is due to a schedule in which the paint crew works on four to six trucks at a time. A single truck is seldom sprayed alone because three or four trucks can be sprayed in little more time than is required to prepare for the first job. Thus standardization of materials and equipment as well as of procedure accounts for the efficiency with which trucks are painted.

Another contributing factor responsible for this efficiency is Krug's standardization of vehicles themselves. Fully three-fourths of the fleet consists of ½-ton trucks. There are also a number of 1½-tonners and a dozen or more each of dual-wheel trucks and semi-trailers. The ½-tonners are used mostly for house-to-house service; the trailers are in relay service, and the dual-wheel jobs are for store trucking.

With so many trucks of standard size, it is easy to schedule them for the paint shop in groups, thus making production-line procedure possible. Another contributing factor is standardization of bodies of one design (for the ½-tonners). These bodies are made of metal in Krug's own body shop.

More than 500 gallons of paint a year are sprayed on Krug's trucks. At least 90 per cent of this is lacquer and the remainder synthetic enamel. We have a definite, practical preference for the lacquer. Peculiar conditions of our operation account for this preference. These are: (1) the opinion, and the experience, that lacquer withstands scratching from low hanging trees better than other finishes; (2) the rapidity with which jobs are turned out of the paint shop is only possible with a paint that dries as quickly as lacquer; (3) this high-speed drying quality more than offsets time required in polishing the job; (4) our painting schedule and our production line method of operation permit us to polish a truck without actually adding to the time the vehicle is out of service; (5) our costs are in line with other large fleets not using lacquer.

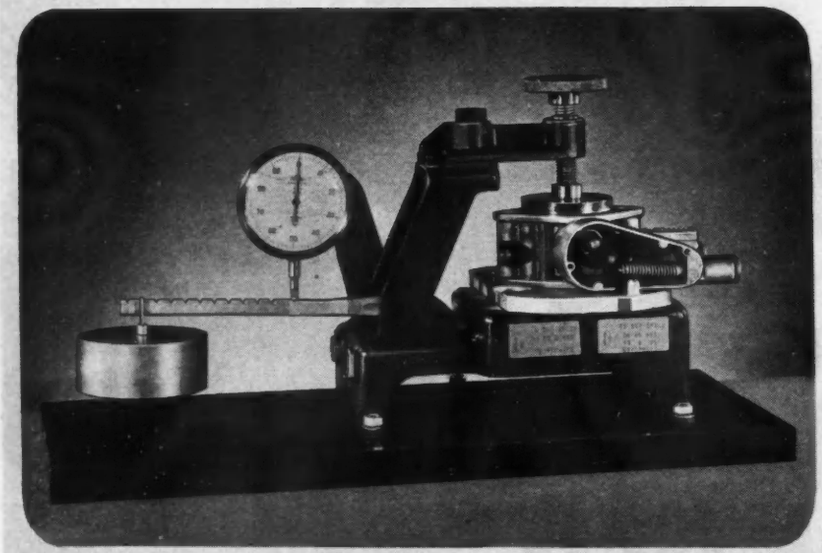
A paint job on a Krug truck is good for 24 to 30 months, but during that time a vehicle may see the inside of the paint pen several times for a touch-up job. At the first sign of a crack or scratch or blister the truck is treated to a retouching job to prevent festering. If the surface is good, the area is merely sanded and sprayed, then polished and waxed. It is this perpetual face-lifting and updoing that makes the fleet among the

(TURN TO PAGE 54, PLEASE)

Handy INITIATES AN EFFICIENT FIELD SERVICE FOR GOVERNORS

An automotive governor is a precision device. Its accuracy and efficiency depend upon proper calibration. Whenever governors are serviced, whether involving the replacement of worn parts or merely cleaning, accurate recalibration is essential.

To eliminate the delay of returning Handy Governors to the factory for this purpose, King-Seeley Corporation has placed in the hands of each Handy Distributor a duplicate of the precision calibrating machine employed at the factory. The Handy Distributor is now equipped to do a complete repair job and to do it well, insuring original factory calibration specifications so as to provide the standard of performance of a new governor. This applies to all Handy Visible Action and Vari-Speed models.



KING-SEELEY CORPORATION • Ann Arbor, Michigan

HANDY *Visible Action* GOVERNOR

World's Largest Manufacturers of Automotive Governors

THESE GREAT SETS ASSURE REAL PREVENTIVE SERVICE
P.S. PREVENTS SCUFFING. BECAUSE EACH RING IS TREATED WITH GRANOSEAL!
P.S. PREVENTS 'STRAVAGANCE BECAUSE THESE RINGS END OIL PUMPING IN A HURRY!
P.S. PREVENTS SWEARING BECAUSE THESE RINGS ARE EASY TO INSTALL!
P.S. PREVENTS SCOLDING BECAUSE YOUR DELIVERY SERVICE IS DEPENDABLE!
POWER SEALED
Engineered
Individually
POWER
Engineered
RING SET
SEALED POWER
PISTON RINGS
SEALED POWER
Individually Engineered
PISTON RING SETS

(CONTINUED FROM PAGE 52)
country's best dressed. When outfitted in its Sunday best, each truck sports a two-tone garb of light and dark green on the upper and lower parts of the body, respectively, with a yellow belt for trim.

The painting routine, although conventional in its fundamentals, makes interesting study because of the speedy and high-grade results obtained. A truck ordered into the paint shop on Monday morning immediately has the old paint stripped to the bare metal of the body. All moldings, plates and hardware are removed and also stripped of paint. Any attempt to eliminate removal of moldings would prove abortive because cracks would eventually appear at the joints where the green paints meet the yellow of the molding.

The old paint is removed by hand scraping (surprisingly easy) and the body is cleaned down with a pure form of gasoline cleaner which cuts grease and oil and removes foreign particles. The body is then wiped with a dry rag and is then ready for the primer which is sprayed on and allowed to dry overnight. Of special interest is the fact that the primer is applied immediately after the body has been wiped down. This prevents dust or moisture, or dirt from an aimless pair of hands from marring the cleaned surface of the body.

Tuesday morning the primed body is sanded with 320 paper, blown clean with a high pressure air hose and wiped with a varnish tack rag. The surface is now ready for the undercoat of color. The light green is sprayed first on the upper part of the body. Four coats are sprayed on in rapid succession. The lacquer sets quickly and the operation requires only one hour for two men. In the meantime the metal trim had been scraped and primed and is now replaced on the truck.

By this time the light green has dried and can be masked to permit spraying a red oxide quick drying undercoat on the metal trim. The trim is allowed to set for 20 minutes. Then four coats of yellow lacquer are sprayed on in rapid succession. If you think a four-time repetition of this operation unnecessary, our experience proved that less than that would not stand up under continuous polishing. The wheels are finished with the yellow trim. They are sanded, primed and given two heavy coats of yellow—when the old finish is not removed.

Half an hour later, the yellow trim is masked and three to four coats of dark green are sprayed on the lower part of the body. As with the light green, this operation is continuous and barely takes an hour. The dark green covers better and sometimes permits elimination of the fourth coat.

Meanwhile the chassis is painted with black enamel (having been cleaned by the washers before it came into the paint shop), the inside of the ½-ton truck is given a coat of oil paint primer, the roof is given a coat of oil base primer, the crew puts away its equipment, locks the door and goes home. Remember, all this happens in one day. And neither heat nor water can stop the schedule. The only possible delay might be caused by cold or moisture, but the shop is prepared for this eventuality by being lined with radi-

(TURN TO PAGE 56, PLEASE)

MAINTENANCE MAGIC!

PERMANENT Repairs— with KESTER SOLDERS—

Save Shop Time— Cut Shop Costs

Kester Cored Solders are maintenance shop stand-bys, for all soldering repairs. They can help you reduce all-important shop costs—both by cutting the time it takes to finish repair jobs, and by making necessary repairs less frequent.

Take Kester Acid-Core Solder, for instance, the right solder for all general truck maintenance work. Pure acid flux, conveniently self-contained in the solder itself, makes it easy to use. Repairs take less time, a definite saving on the job ticket.

Then, too, the virgin metals used in Kester Acid-Core Solder positively insure permanence. With Kester you are *free from failures* that come from disintegration of solders made from reworked scrap and junk metals. Kester Acid-Core Solder resists bending and shock, and the continual strains that come with expansion and contraction due to temperature changes.

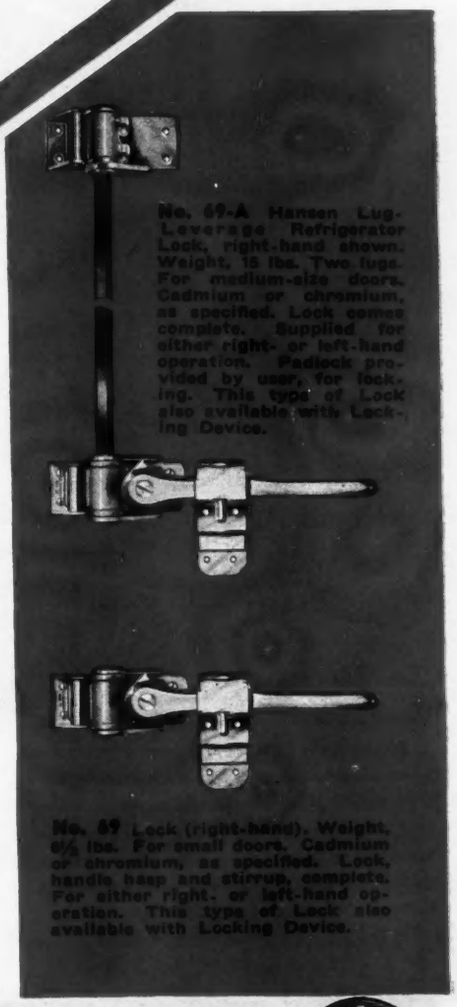
When you "fix 'em with Kester, they *stay* fixed."

KESTER SOLDER COMPANY
4205 Wrightwood Avenue, Chicago, Ill.
Eastern Plant: Newark, N. J.
Canadian Plant: Brantford, Ont.

KESTER CORED SOLDERS
FOR EVERY AUTOMOTIVE USE

INDIANA BODY CO. for Fleets with MAXIMUM PAYLOAD Use HANSEN HARDWARE

Part of a fleet of twenty-one units built by Indiana Body Co., Richmond, Ind., for the Red-O-Creamery.



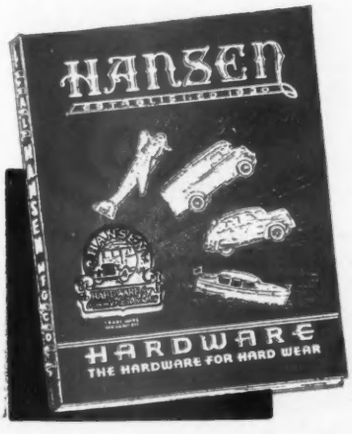
No. 69-A Hansen Lug-Leverage Refrigerator Lock, right-hand shown. Weight, 15 lbs. Two lugs. For medium-size doors. Cadmium or chromium, as specified. Lock comes complete. Supplied for either right- or left-hand operation. Padlock provided by user, for locking. This type of Lock also available with Locking Device.

No. 69 Lock (right-hand). Weight, 6½ lbs. For small doors. Cadmium or chromium, as specified. Lock, handle hasp and stirrup, complete. For either right- or left-hand operation. This type of Lock also available with Locking Device.

MAXIMUM payload ***delivered*** — the quantity and quality of merchandise ***upon delivery***—is the most important factor in handling perishable products. Accordingly, the Indiana Body Co., Richmond, Ind., equip their refrigerated fleets with Hansen Lug-Leverage Refrigerator Hardware.

Doors locked with Hansen Lug-Leverage Locks are not ***merely closed***—they are ***compressed tight-shut*** and ***held under pressure.*** This same lug-leverage action easily breaks frost seal. These Locks keep the cold in and the heat out!

Fleet designers, builders, users—it will pay you to insist on ***Hansen*** Hardware, built especially for commercial body service.



Send for NEW Catalog

Contains many new and distinctive Locks with Locking Devices, etc., in a complete and varied line.

A. L. HANSEN MFG. CO.
5047 RAVENSWOOD AVE.
CHICAGO, ILL.

HANSEN
HARDWARE for Commercial Bodies

(CONTINUED FROM PAGE 54)

ators with heat available at all times. In this way humidity is kept low enough to prevent its interfering with painting procedure.

On Wednesday, the third day, the job is compounded out. Rubbing compound is applied with "beef" cloth (soft jersey cloth to you) to a small area at a time and rubbed down with an electric machine. This job takes one man three hours. In the meantime a complete set of specially varnished decals has been prepared. They are wetted with transfer cement, allowed to set 20 to 30 minutes and then applied to marked positions on the truck body. This requires two hours' time. During this time the inside of the small trucks is finished with a coat of grey synthetic enamel and the roof is finished with a coat of aluminum enamel.

On Thursday, the fourth day, the job is waxed with a paste wax applied by hand and rubbed down with an electric machine. The current date is then stencilled inside the truck and the vehicle is in service again Friday morning, clean-shaven, and looking as though it had just come from a turkish bath.

Krug trucks are kept in this condition through daily inspections of the paint job made as part of the daily maintenance checkup. If a truck receives a scratch it is not permitted to remain on the street long enough for the exposed metal to rust. Trucks are rewaxed every three months and the operation is so staggered that three or four trucks are waxed nightly. At each three-month waxing, paint surfaces are checked for cracks and peeling.

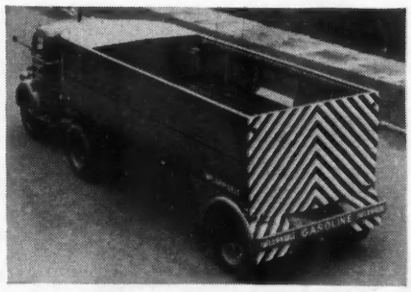
Between waxings each truck keeps its face clean by being washed every third day, if possible. Most of these are clear water washes with water at city pressure. The water spurts through a brush attached to the hose so that a truck is rubbed down at the time it is being washed. A soap and water wash is resorted to only when road film and dirt are exceptionally heavy.

More than a hundred trucks are washed nightly by four men and a feeder who moves the vehicles along. The company is now planning installation of new equipment to step-up washing by 25 per cent.

An accurate record is kept on a special card system of the work done and the time required for each truck. This is a record form which I devised myself and which gives all necessary information at a glance: the names of the men who worked on the truck, the time required for each operation, the cost of each individual step in the refinishing process, amount of materials used, etc.

END

(Please resume your reading on p. 34)



Another first from the Heil Co. is this "trailerized" tank-body. Under the platform is a 2000-gal., three-compartment gasoline tank. The open deck carries empty or loaded drums while a package compartment all the way forward is totally enclosed

The Rail-less Lift That Lowers Maintenance Costs

Weaver Twin Posts are preferred by fleet maintenance men because they help to do more jobs faster. Wheels may be removed, pancake motors lowered, sludge drained completely from crankcase and differential and a dozen other jobs performed quicker and easier. For complete information write to Weaver Manufacturing Co., Springfield, Illinois.

Heavy Duty Twin Posts have a capacity of 24,000 lbs. when air operated, 36,000 lbs. when power operated.

ENLIST HORSEPOWER, TOO

WHAT CASITE DOES:

Frees sticky valves and rings . Improves gasoline mileage . Cleans out sludge and gum ... and keeps them out . Retards formation of engine varnish . Improves lubrication . Makes motors start easier and quicker in winter weather . Breaks in new or reconditioned motors.

★ Fleet operators realize that keeping their trucks rolling is of vital importance in this national emergency.

That's why they need Casite more than ever before.

Casite keeps horsepower in fighting trim all the time. It dissolves sludge and gum—retards formation of engine varnish—and keeps motors at their peak of performance.

Though not a lubricant itself, Casite actually increases the lubricating ability of motor oil, carrying it farther and faster to high-friction, close-clearance parts. That means longer life.

* * *

Casite should be in every motor—all the time. Use a pint in the crankcase with each oil change and tune-up with a pint through the carburetor each 5000 miles.

THE CASITE CORPORATION • HASTINGS, MICHIGAN

★ ★ ★ **CĀSITE** ★ ★ ★

CLEANS OUT MOTORS • KEEPS MOTORS CLEAN

MEMO ON MATERIALS FOR TRUCKS

(CONTINUED FROM PAGE 23)

stances. Stampings have replaced forgings and forgings have replaced both stampings and castings in the shuffle. Die castings have replaced stampings and castings and forgings. The battle never ends. It is of the essence of a free competitive system where the best comes to the top.

Metallurgists will tell you that at least some of the materials now coming into use under pressure of history should have had a trial before this—and may be difficult to displace later on. Just think that over.

In essence we do not face an "ersatz" economy in the U. S. We are facing a serious emergency but you may be sure that the skill of the engineers, the metallurgists, and other technicians is equal to the task of seeking out a new inventory of materials capable of maintaining the highest standards of performance and durability to which the user has become accustomed.

Timken Axle Statement

Truck, bus and automobile purchasers have nothing to fear from substitute or alternate materials introduced in new models to conserve materials vital for defense production, according to Walter S. Rockwell, president of The Timken-Detroit Axle Co.

"The socalled substitutes in many instances are proving superior to materials formerly considered essential," Rockwell said. "The consumer, in fact, will greatly benefit because engineers conducting research and developmental work on new materials have speeded up their improvement program to bring out new, better products as much as one to five years earlier than might otherwise be the case."

"In other instances, thoroughly tested and proved materials, which have been withheld from production only because of the abundant supply of conventional materials with which manufacturers were more familiar, now will have their chance to prove their superiority to the public."

Rockwell cited the new Timken Axaloy steel as one example of the defense-accelerated improvement which will benefit buyers of many new trucks and buses with Timken axles. The new steel, which surpasses in strength, hardness and toughness the nickel alloy materials formerly used for axle shafts and gears, is ready for production after more than two years of experimental work and testing.

Introduction of Timken Axaloy steel will have an important bearing on defense production, in that it relieves the demand for nickel, formerly believed essential in steel alloys suitable for axle parts which are subject to tremendous stresses, twisting and strains.

More than two years ago, before any possibility of a shortage in nickel or chromium existed, Timken engineers started an extensive program of research and experimental work in an effort to develop a material of even greater toughness and strength than the nickel alloy steels then in use. Improved steel manufacturing methods whereby a combination of alloys is added to the steel at the

(TURN TO PAGE 62, PLEASE)

HIGHWAY HAULAGE WITH AN EDWARDS IS A
MONEY-MAKING OPERATION
THERE are two very good reasons for checking Edwards before you buy any trailer.
ONE is that Edwards lightweight steel construction cuts off all the excess deadweight it is practical to eliminate. That means you haul bigger payloads.
TWO is that Edwards sticks to tried and proved principles of trailer engineering. That means you save money when repairs are necessary.
Wide frames, straight end type springing, Timken tubular axles, full width pick up plate and more than 20 other features make Edwards a sound investment for profitable haulage. Investigate these Edwards trailers today.
ROCK WOOL
Ohio Insulation Co.
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mfg. of ROCK WOOL
INSULATE for COMFORT and ECONOMY
EDWARDS HI-TENSILE STEEL SEMI-TRAILERS
EDWARDS IRON WORKS, INC., SOUTH BEND, IND.
ATTRACTIVE PROPOSITION FOR QUALIFIED DEALERS—WRITE OR WIRE

PRESENTS...

Another

GOLD MEDAL ACHIEVEMENT

... AND THE ANSWER TO A PROBLEM KNOWN TO ALL FLEET OWNERS

QUAKER STATE engineers and technicians have been constantly alert in developing a motor oil that more than meets the lubrication requirements of *peak-load service* such as that experienced in trucks, buses, tractors and other modern motorized equipment—both gasoline and Diesel engine powered. QUAKER STATE is, therefore, proud to announce the new QUAKER STATE HD Oil—a high-quality product which has been especially formulated and refined for peak-load, heavy-duty service.

This new QUAKER STATE HD Oil is in action now! It is working on tough jobs at the present moment. It is more than meeting the demands of fleet-owner service 24 hours a day. It is pushing lubrication costs down. It is surrounding motors with the lubrication safeguards that mean longer life at the very moment when new-unit production of the automotive industry is being curtailed.

There is no doubt about it, QUAKER STATE HD Oil has arrived on the scene at a crucial moment for operators of all types of motorized equipment, and it's knocking at the door of your office right now.

If you want a real eye-opener on how to reduce lubrication costs and secure longer and better service from your equipment, get a trial supply from your QUAKER STATE distributor — and be sure to sign and mail the coupon in the right-hand corner of this page today.

OIL CITY, PENNSYLVANIA

Quaker State Oil Refining Corp.
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Gentlemen:

Please send me your new, free, 8-page illustrated booklet on Quaker State HD Oil.

Name.....

Street.....

City.....State.....

(Cut this out—Fill in—Paste on Penny Post Card)

(CONTINUED FROM PAGE 58)

ladle resulted in a product having fine grain structure and uniform quality. Starting with this improved forging bar steel, Timken engineers developed new, better methods of heat treating—resulting in a steel of heretofore unknown surface hardness and overall toughness.

In laboratory torsional fatigue tests simulating actual service conditions, axle shafts made from the new Timken Axaloy 140 steel showed a definite superiority over shafts of other materials. Timken Axaloy 325 and 420 have also proved superior for final drive gear teeth, which must have an exceptionally hard surface to resist wear and must be strong enough to take shock loads without breaking off.

Both laboratory and road tests have shown that the new series of Timken Axaloy steels shows a combination of hardness, strength and toughness unequalled in the higher grades of alloy steels. Performances heretofore believed impossible are being recorded daily in experimental tests and actual service. Axaloy is already being used in Timken axle shafts and final gears, and will be applied to other axle parts as rapidly as production permits.

"After all, necessity really is the mother of invention," Rockwell said. "The motor vehicle builders have too much at stake to use any new material that has not proved as good or better than materials formerly used. The present-day necessity for conserving vital defense materials will, in all probability, bring about engineering advances in the next year or two that would, under ordinary conditions, require much longer."

Ford to Maintain Quality

There will be no reduction in the quality of cars built by the Ford Motor Co., regardless of changes in specifications made necessary by restriction in the use of certain metals essential to the defense program, according to R. H. McCarroll, Ford metallurgist.

Probabilities are that the weight of the cars will be increased slightly but this increase will not be large enough to affect gasoline economy in the slightest. The increase in weight will be less than 5 lb. in the case of the Ford and Mercury cars and not more than 20 lb. in the Lincoln cars.

The only other effect of the changed design will be that the cars will cost somewhat more to produce. Mr. McCarroll cited, for example, the carburetor bowl, which now is a zinc die casting. This will be changed to cast iron. While zinc is a good deal more expensive than iron, the iron carburetor bowl will cost more than the zinc die casting because its production will involve considerably more labor. The additional machining cost, in other words, more than offsets the lower material cost, and in this case it also adds weight.

Elimination of nickel in the steel used for valves would reduce the "hot strength" of the valves, were it not for the fact that the design has been changed. The change adds slightly to the weight of the valve.

"Materials can be changed if we make corresponding or compensating changes in design," Mr. McCarroll said in referring to the valve design.

Another example of a different kind is the change from the zinc die-

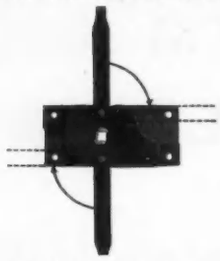
(TURN TO PAGE 64, PLEASE)

You'll Appreciate these OBVIOUS ADVANTAGES

in the NEW NO. 5611 3 POINT *DEAD-BOLT LOCK for COMPARTMENT DOORS OF UTILITY BODIES AND TANK TRUCKS

*FOR SPRING ACTION LOCKS SEE NO'S. 5613 and 5699

1. Over-all thickness only 3/8".
2. Locks door at 3 points.
3. No projections to catch or interfere with load.
4. All-steel construction. Attachable by means of screws, bolts, rivets or welding.
5. Rods attachable or removable without the aid of tools.
6. Priced low because of simplified construction.



Rods can be attached to the center case; or detached, quickly and easily without the use of tools.

With the center latch in the unlocked position the flattened, drilled ends of the rods are placed over the exposed pins. The rods are then turned lengthwise passing under the ears of the cover plate which hold them firmly in position. Attachment of the rod guides completes the installation.

A notch stamped into the cover plate prevents accidental opening and provides a springing action in opening and closing the lock.

This original design eliminates projecting pins and cotter pins, giving a smooth surfaced lock that is exceptionally thin.

Available right or left hand. The rods furnished are for a 68 inch door but may be cut to fit shorter doors.

Write for complete information and prices.

EBERHARD MANUFACTURING CO.

Division of The Eastern Malleable Iron Co.

CLEVELAND, OHIO

NEW SUPER-LUBRICANT

KEEPS ENGINES CLEANER —LUBRICATES BETTER

BASICALLY DIFFERENT!
SPECIALLY PROCESSED!
REINFORCED!

- 3 to 10 Times Stronger Protective Film
- Removes Hard Carbon
- More Adhesive and Penetrative
- Non-Corrosive—Safe
- Keeps Piston Rings Free
- Adds Power, Saves Fuel, Saves Wear and Shut-Down Time

LION Naturalube D.H.D. OIL

FOR DIESEL AND HEAVY DUTY

Naturalube D. H. D. is made from a rare and basically different crude oil which imparts to the finished product a 3 to 10 times stronger protective film . . . greater adhesiveness and penetrativeness . . . and ability to remove hard carbon deposits. By special processing, Naturalube D. H. D. is reinforced or fortified to resist the deteriorating effects of extreme heat and oxidation. Results — engines are cleaner; rings and valves operate more freely for longer periods; no clogging of filters, screens or oil lines (*i.e.* clogging attributable to oil). There is no hard-carbon scuffing; general engine performance is greatly improved; operating and maintenance costs are lower; shut-down time is minimized. D. H. D. is non-corrosive — safe. It saves wear, adds power and saves fuel. Try D. H. D. — Your money back if you don't believe it to be the *best* oil you ever used!

Naturalube D. H. D. has been tested and approved by leading engine manufacturers.

Write for free brochure "New-Type Lubricating Oils" containing proof of Naturalube's money-saving properties and details of money-back guarantee. Address Advertising Dept., Lion Oil Refining Company, El Dorado, Ark.

Made By **LION OIL REFINING COMPANY El Dorado, Ark.**

LION PETROLEUM PRODUCTS

(CONTINUED FROM PAGE 62)

cast instrument panel to a plastic panel.

"Many people ask," Mr. McCarroll continued, "how it is that, if iron in many instances can be substituted without loss of quality for aluminum and zinc, it has not been done before."

"Certainly the main thing that will result, if we make many of these substitutions, is an increase in cost. For instance, the cost of the material in an iron carburetor would be less than the cost of the material in the zinc die cast carburetor, but the machining saved more than makes up for the difference in material cost. This is true in most of the parts now made of zinc alloys and in many of those made from aluminum.

"The thing I want to stress is that we very definitely will not build an 'ersatz' car made up of inferior materials. The cars will cost us slightly more to build and will be slightly heavier, but the owner would never know the difference as far as the performance and operation of his car are concerned."

Delco-Remy Substitutions

That apparently goes also for accessories. The Engineering Department of Delco-Remy Division of General Motors Corp. supplies the following information:

"Zinc Die Castings will be replaced by steel stampings for some switch and lock parts; by plastic molded pieces for some regulator and switch covers; by lead alloy die-castings in other switch parts and possibly in some horn parts. In some instances it will probably be necessary to use steel stamping reinforcing pieces where lead alloys are used.

"Zinc Plating has been changed over for some parts to tin or copper plating.

"Nickel Steel is being changed over to chrome molybdenum steel.

"Nickel Plating in some instances is being changed to tin plating. Where used under chrome plating the thickness of nickel plate is being reduced.

"Nickel Resistance Wire is being replaced in some applications by molded carbon resistances.

"Sheet Aluminum is being replaced by steel in our horn resonator discs.

"Aluminum Die Castings are being replaced by plastic molded parts in some switch applications, and by steel stampings for some heavy-duty coil applications.

"Aluminum Foil is being changed to tin foil.

"Brass is being replaced in some applications by plated steel; in others by bronze, and in others by hard copper.

"Neoprene Treated Diaphragm Cloth used in vacuum units is being replaced with cloth having other impregnation.

"Neoprene Gaskets are being replaced by special composition rubber.

"In the case of some substitutions, practically no change in tooling is involved; in others, the whole design of the unit had to be changed and retooled in order to use a substitute."

END

(Please resume your reading on p. 24)

Jordan Heads Penna. Rubber

Howard W. Jordan has been elected president and director of the Pennsylvania Rubber Co. Mr. Jordan was formerly vice president and merchandise comptroller of Montgomery Ward & Company, Chicago.

IN THE NEW **ZENITH GOV·U·RETOR** TO SAVE YOU MONEY!

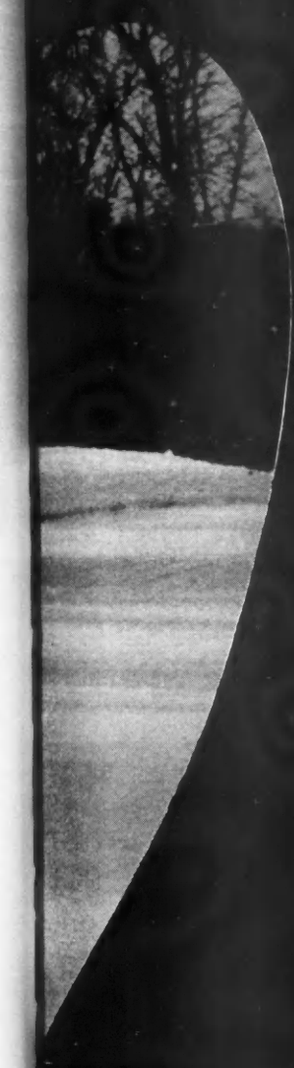
ITS name tells you exactly what the new Zenith Gov-U-Retor is—a combination of the famous Zenith Carburetor with governing action.

This compact, efficient unit can be guardian of your engines, and control driving to economical speeds. It checks cheating by throttle manipulation; reduces surging, provides even power flow; does away with separate governors and simplifies service.

And it's evident of course that with this one compact, efficient unit you save on replacement cost. "Better in every way than separate unmatched units," say enthusiastic truck and bus operators. Made in both downdraft and updraft types. Here's a real short-cut to savings. Better get complete information now. Write—

ZENITH CARBURETOR DIVISION
BENDIX AVIATION CORPORATION
696 HART AVENUE DETROIT, MICHIGAN

PLAN NOW!



Highway Officials:

Have you checked into Snogo recently? Do you know about the wide range of Snogo models and prices? There is a size for every budget, from 1½ tons to the largest four wheel drive type of truck. There is no excuse today for not having Snogo protection!

KLAUER MANUFACTURING COMPANY
Dubuque • Iowa

Defense Depends on Open Roads

A BRITISH FLEETMAN SPEAKS

(CONTINUED FROM PAGE 35)

to call upon each group manager to provide a proportionate number of the total required. The group manager has then to arrange for the provision of such vehicles by the operators in his group. The vehicles so requisitioned by the government may be required to be handed over to drivers of any of the three fighting services, or the operators can be required to turn them over with their own civilian drivers.

Early in the war, many municipal authorities requisitioned vehicles for use in their air raid precautions services, but fully 50 per cent of all vehicles so requisitioned have long since been released back to their owners. During the period of requisition the municipality paid a reasonable and satisfactory rate of hire, and I have never heard of any complaint by any operator as to his treatment at their hands. In many cases the local authorities would finally buy the requisitioned vehicle, and whilst the price would be only very slightly more than the pre-war second-hand value, usually such truck had earned a considerable revenue in hire during the period of requisition, and more often than not the offered price is accepted by the operator without demur (even though he might be able to sell at between two and three times the price elsewhere). This may sound unbusinesslike, but in most cases the municipal authority is a valued client of the local transport operator in peace time, and the municipality's good-will is esteemed.

No Parts for Stock

Generally speaking, spare parts present one of the greatest problems in war-time operating. To commence with, the Ministry of Supply made an order that no spares may be purchased for stock or reserve, but may only be obtained for immediate use. As a result, our stock of spares consists solely of old patched-up parts, for temporary use whenever necessary whilst awaiting the arrival of any new part required.

As regards obtaining spares, in the case of some parts it is necessary first to obtain a permit from the Ministry of Supply to purchase; whilst in the case of other parts, there are no formalities at all. As an example, we have to obtain a permit to buy any electrical equipment and wheel studs for the Dodge, but all other Dodge parts are permit-free. We have to obtain a permit for all nuts and bolts, and practically all new garage equipment such as air-pumps, drilling machines, lathes, etc.

For British or American makes of vehicles we can get new parts comparatively easily, but it is, of course, impossible to get any new parts for any French, German, or other Continental makes, and for these latter, second-hand parts are becoming ever increasingly scarce; until finally, I suppose, there will be none at all.

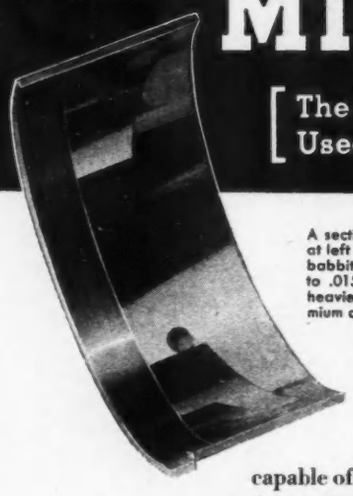
Many worn and broken parts that would have been immediately placed on the scrap-heap before the war, are now repaired and patched up, if not for immediate use, to be stored carefully away against need. As I have said, usually we can get any new part

(TURN TO PAGE 72, PLEASE)

FOR 1941 REPLACEMENTS

THE *NEW* MONMOUTH MICRO BEARING

[The Same Bearing So Widely Used As Original Equipment]



A section of the bearing metal on the Monmouth Micro Bearing at left has been cut away from the steel back to show the thin babbitt lining—only .003 to .005 inch thick, as compared to .012 to .015 thickness in the conventional insert type bearing. The heavier steel strip used to back up the babbitt lining is of premium quality, held to a tolerance of .0005 inch on thickness.

● The new Micro Bearings used in so many 1941 models have a capacity for punishment far beyond levels previously attained in production. They are capable of carrying greater loads, and their construction more than doubles fatigue life.

Yet *even these bearings* may fail through faulty lubrication.

When replacement is needed, be sure that you receive bearings of the same high quality, and the same fine construction used in the original motors.

Specify *Monmouth* MICRO Bearings—readily available through NAPA Warehouses and associated jobbers for servicing the cars and trucks using Micro Bearings as original equipment.

NAPA Assurance of Quality

Master stocks of Monmouth Engine Bearings are maintained in NAPA Warehouses from coast to coast, assisting hundreds of jobbers in every section of the country to give prompt service even on rarely called-for numbers.

MONMOUTH PRODUCTS COMPANY, CLEVELAND, OHIO

ENGINE BEARINGS • CLUTCH PLATES AND PARTS • KING BOLT SETS

Monmouth *Is the Name!*

CARTER REPAIR PACKAGE

Saves Time ···SAVES TROUBLE
ASSURES A BETTER JOB

No long list of parts to select and order—just one item.

The essential parts for thorough service are included—assuring a better job.

Each package contains a service procedure page showing how to install the new parts, together with catalog page showing latest specifications and adjustments for the carbureter and engine tune-up.

Ask your Carter jobber or distributor

CARTER CARBURETOR CORPORATION

2820-56 North Spring Avenue, St. Louis, Missouri

Division of American Car and Foundry Company

CARBURETER

PRODUCTS OF PRECISION

(CONTINUED FROM PAGE 70)

for vehicles of British or American make, but often we must wait a very long time for delivery. I myself had to wait no less than four months for one lot of spares.

Aluminum parts are much more difficult to obtain, and in most cases quite impossible. Parts of trucks formerly made of aluminum are now being turned out in cast-iron or other heavier metals. Indeed, because of this substitution of heavier metals, the Ministry of Transport has made the concession to operators that the unladen weight limit of 2½ tons be increased to 3 tons for the purposes of the 30 m.p.h. speed limit. Before the war, a truck exceeding 2½ tons unladen was prohibited from exceeding 20 m.p.h., but by the concession above referred to, this has been increased to 3 tons unladen.

Unfortunately, however, no concession has been made in regard to taxation, and in this respect the use of heavier parts does involve a hardship on the operator. As an example, a truck unladen weighs normally 2½ tons, and the annual tax of such truck is £30 per annum: the substitution of cast-iron parts for aluminum parts on the same truck increases its weight, let us say, to 2¾ tons unladen, thereby increasing the tax to £35. (Thus the operator has to pay an additional £5—about $20.00—the year.)

That the increase in unladen weight through heavier metal parts is recognized by government is illustrated by the concession in the speed law, but similar compensation is withheld in the case of the annual tax. However, in practice, the taxation officials since the war seldom require official reweighing of vehicles, so that most trucks that were originally 2½ tons unladen are still paying tax on that basis, even though their weights may have been increased to nearer 3 tons due to the use of heavier metal parts. Still, at any time an operator may be required to re-weigh his vehicles, and be charged tax on the present-day increased unladen tonnage; so that really the position is quite unsatisfactory.

Incidentally, the very greatest difficulty is experienced in obtaining that type of spare part that is manufactured by automatics, such as wheel studs. The reason, of course, is that the automatics have been taken over by government for the manufacture of munitions.

Tires Are Easy

No permit is required to secure new tires, and in many sizes they are fairly easy to obtain. But certain sizes, those required by government, are quite unobtainable for very long periods. We naturally make our tires last as long as possible, and make the greatest use of re-treading. Many actual manufacturers of tires undertake re-treading, and nowadays they will re-tread a badly worn tire they would have refused to touch before the war.

. . . But No New Trucks

If a truck becomes too far gone for repair, and has to be dismantled for its useable parts, the only chance of replacing it is in the second-hand market. In the ordinary way a new truck is simply an impossibility. A special permit is required from the Ministry of Supply for any new vehi-

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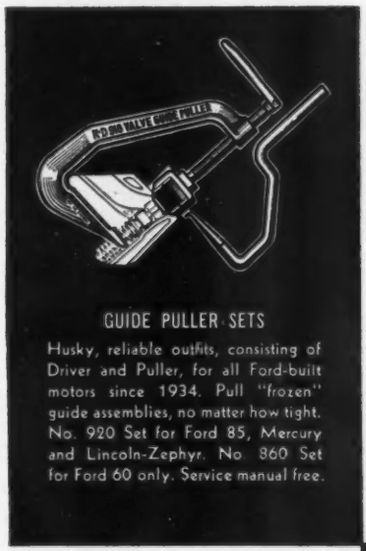


GUIDE PULLER SETS

Husky, reliable outfits, consisting of Driver and Puller, for all Ford-built motors since 1934. Pull "frozen" guide assemblies, no matter how tight. No. 920 Set for Ford 85, Mercury and Lincoln-Zephyr. No. 860 Set for Ford 60 only. Service manual free.

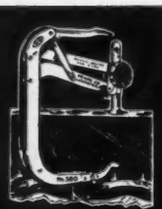
Tools

THAT EARN THEIR KEEP

NO. 600 VALVE LIFTER

For nearly all L-head motors. An old established favorite in thousands of shops. Adjustable, tempered jaws, parallel acting.

K-D Tools are made by automobile mechanics, for automobile mechanics. Each one is designed to do a particular job . . . to do it easily . . . to do it quickly. The K-D Catalog is full of time and labor savers, the result of twenty years progressive designing and producing special hand tools for the automotive trade. There are a few (but only a few) shown here. Send for the complete catalog today and convince yourself that K-D Tools can save YOU real money on every job.



NO. 380 COMPRESSOR

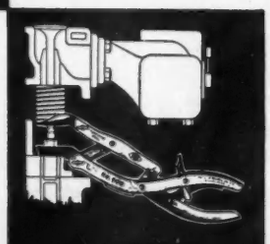
Fast and strong, services nearly all L-head and valve-in-head motors. Two pairs tempered adjustable jaws, straight and offset. 10" x 10¼" inside clearance.

NO. 10K PLIERS KIT

Those 4 popular K-D Pliers in a NEW roll Kit to fit the pocket. Just right for all small work in hard-to-reach places. Each 4¼" long with milled jaws and knurled handles. Tempered.

NO. 605 KEEPER INSERTER

For nearly all split keepers. Easy loading, self supporting on valve stem. Ideal for use with 600 and 380, see above.



NO. 900 LIFTER

For fast under-fender use. 8¾" long, 3" parallel lift. Tempered jaws. Auxiliary jaws for extra high lift.

K-D MANUFACTURING CO.

Lancaster, Pa., U. S. A.

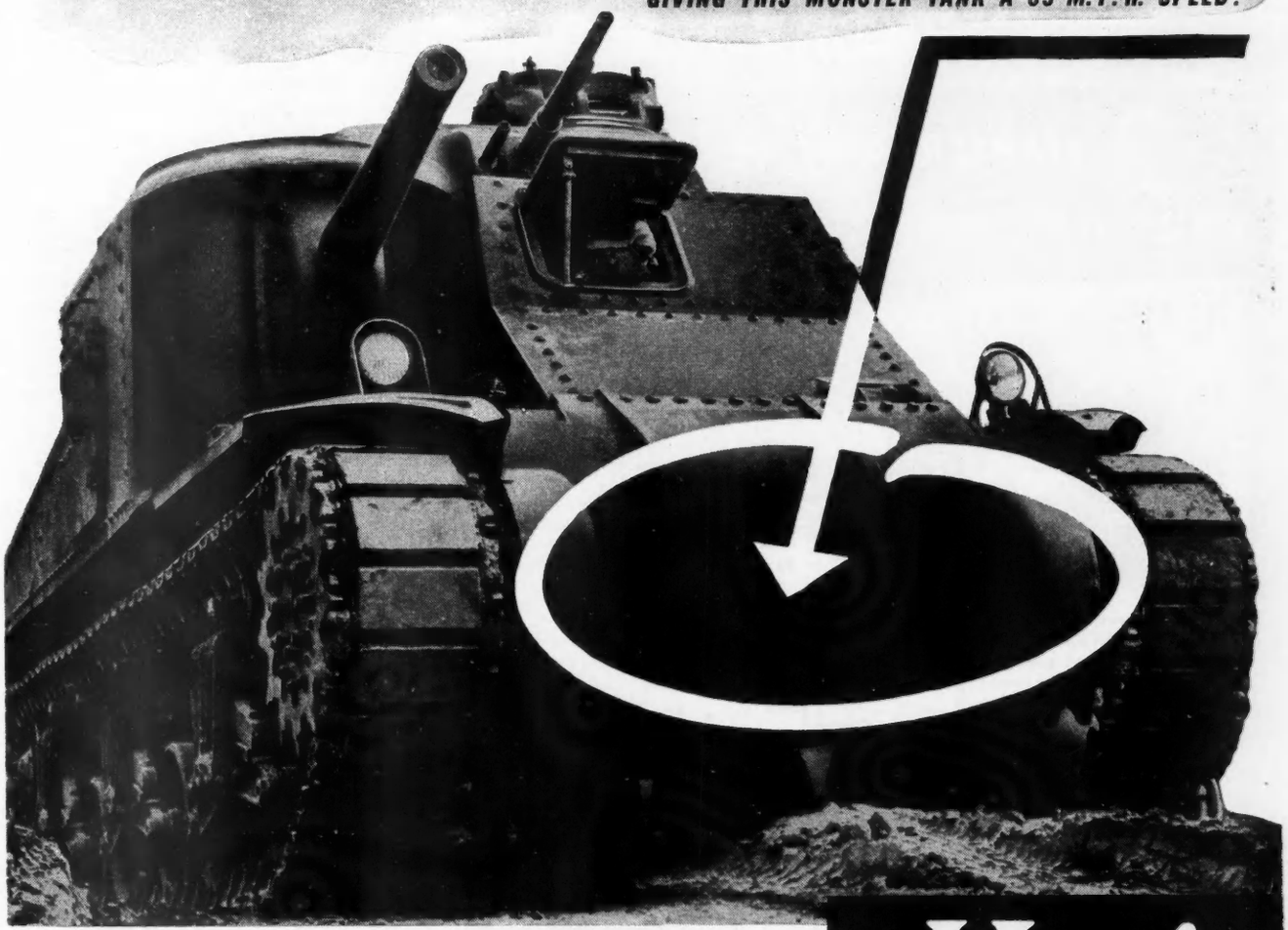
Canadian Factory

HAMILTON, ONTARIO

Ask Your Jobber for Net Prices

30 TONS—geared for fast action!

MACK BUILDS AN 8,000 POUND TRANSMISSION
GIVING THIS MONSTER TANK A 35 M.P.H. SPEED!



Army M-3 tank, "land battleship" of America's modern mechanized army. Armed with cannon and machine guns.

The Army had to have a transmission—one capable of converting the speed of a 400 h.p. airplane engine into the smashing force of a 30-ton tank. *Mack is building it*—a mighty 8,000 pound gearbox, the largest ever manufactured in quantity production—more than 300 times the weight of a passenger car transmission.

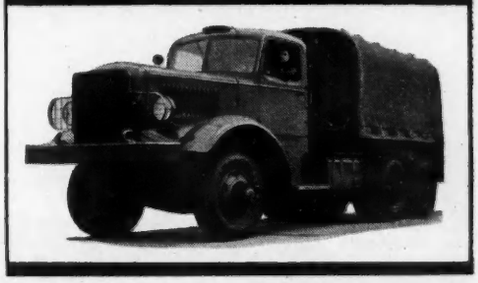
The largest trucks in Army service are gigantic six-wheel Macks. Great fleets of Mack dumpers are clearing the way for air-base construction at defense outposts. Mack skill and resources contribute in more than a score of ways to America's military might.

The Tough Jobs Go to Mack!

MACK TRUCKS, INC., NEW YORK, N. Y.

Mack

TRUCKS
1 TO 45 TONS



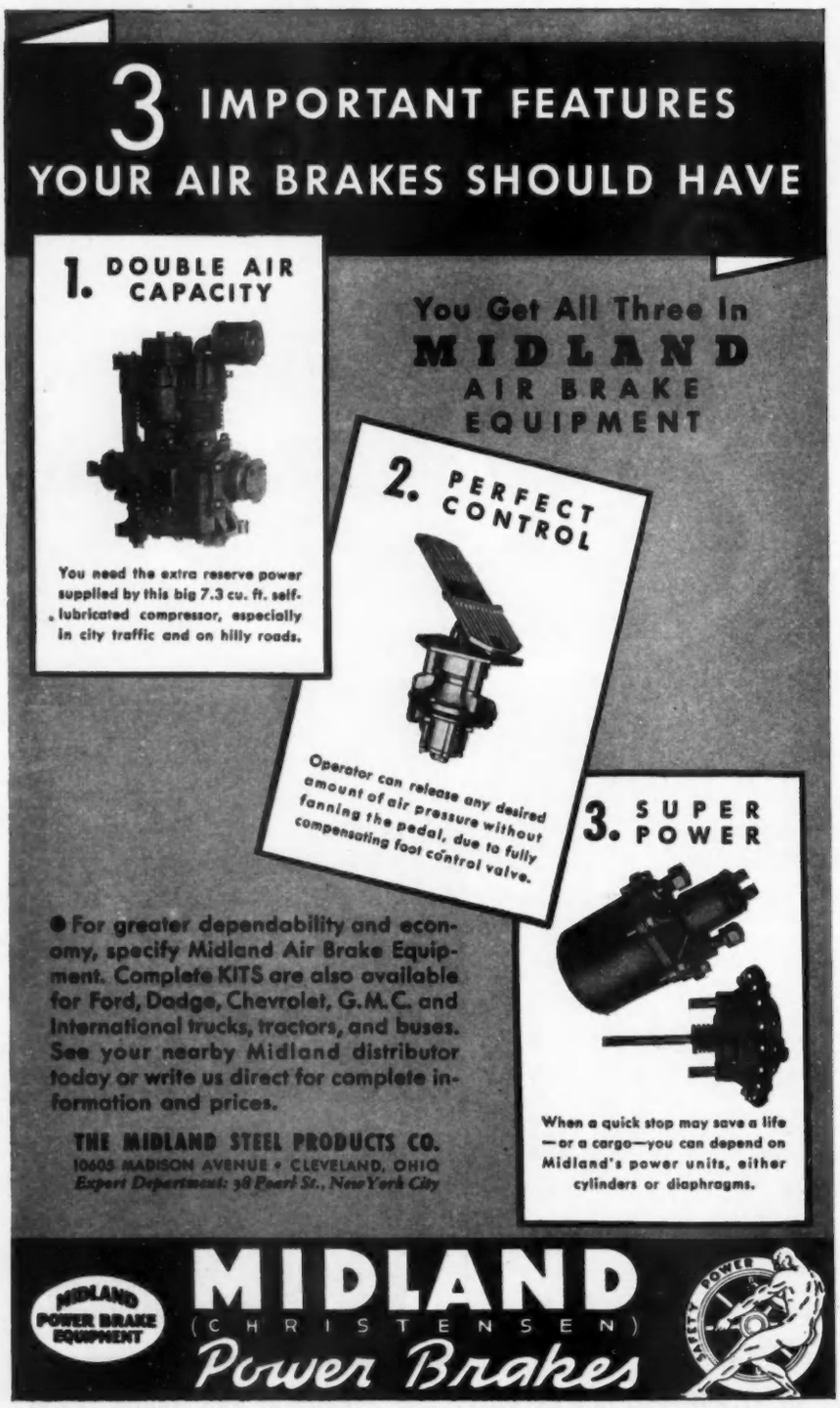
MAKERS OF WORLD-FAMOUS GASOLINE AND DIESEL-POWERED TRUCKS, BUSES, FIRE APPARATUS AND MARINE ENGINES

(CONTINUED FROM PAGE 72)

cle, and such permit is only granted where the vehicle is required by an operator to enable him to carry out a direct government contract. Even though on a government contract, the operator will only get about 10 per cent of his requirements, the allocation being made monthly. However, he can apply again the next month, and so on until possibly he secures the total number necessary for his government contract work. The prices of new vehicles are up by between 25 per cent and 33 1/3 per cent.

As regards second-hand vehicles, prices are up by as much as 200 per cent, and even then are very difficult to get; for although no permit is required, there are practically no used trucks in the market.

Some operators have succumbed to the temptation to sell out their fleets, and retire. They are able to make a capital profit of something like 200 per cent, and the temptation is heightened by the fact that there is no tax on capital appreciation (with the standard rate of income tax now ten shillings in the £, the actual profit tax-free on such capital realization is around 400 per cent). However, when a fleet does in this way come on the market, there are always plenty of other operators anxious to buy them in, attracted by the larger earnings of transport under war conditions.


3 IMPORTANT FEATURES
YOUR AIR BRAKES SHOULD HAVE
1. DOUBLE AIR CAPACITY
You need the extra reserve power supplied by this big 7.3 cu. ft. self-lubricated compressor, especially in city traffic and on hilly roads.
You Get All Three In
MIDLAND
AIR BRAKE
EQUIPMENT
2. PERFECT CONTROL
Operator can release any desired amount of air pressure without fanning the pedal, due to fully compensating foot control valve.
3. SUPER POWER
When a quick stop may save a life—or a cargo—you can depend on Midland's power units, either cylinders or diaphragms.
● For greater dependability and economy, specify Midland Air Brake Equipment. Complete KITS are also available for Ford, Dodge, Chevrolet, G.M.C. and International trucks, tractors, and buses. See your nearby Midland distributor today or write us direct for complete information and prices.
THE MIDLAND STEEL PRODUCTS CO.
10605 MADISON AVENUE • CLEVELAND, OHIO
Export Department: 30 Pearl St., New York City
MIDLAND POWER BRAKE EQUIPMENT
MIDLAND
(CHRISTENSEN)
Power Brakes
SAFETY POWER

War Risk Insurance

Of course, we have to insure our trucks against war risks, the rate being 5 per cent per annum. The basis of valuation for claims is only slightly in excess of pre-war value, so that actually war risks insurance does not offer full indemnity against loss. We might get $600 for a truck that we bought second-hand for $500 before the war, but for which we would today have to pay $1,500 to replace. However, the Ministry of Supply does give consideration, as far as possible, in the way of permits to purchase new vehicles, to those operators requiring to buy a new truck to replace one destroyed by enemy action.

For the first nine months of the war, the transport industry was starved of all personnel; but latterly the Ministry of Transport has learned to appreciate more the merits of road transport, and it now receives more considerate treatment from the government. For the first period of the war, the ministry's policy was to encourage the utmost use of the railroads. But the railways were found to be unable to bear too great a strain on them, and also, since we have had severe enemy air attacks concentrated on railway objectives, the ministry has fully realized that in many respects road transport has great advantages over the iron-roads in time of war. The transport industry has been able to stand up fully to the terrific burden thrown upon it, and has shown ability to carry on its work immediately after, and even during, the very worst of the 'blitzes.

The age at which operational staff is now reserved ranges between 25 and 30 years; and for administrative staff, 30 to 35 years. Wages have risen by about 10 per cent all round. We keep every man we can, as it is next to impossible to engage new staff.

Many drivers now have with them women in place of their former men

(TURN TO PAGE 76, PLEASE)

Exclusive with your dealer for

THE GENERAL TIRE

...See him for the Facts on this NEW

RUBBER-SAVING... MONEY-SAVING

METHOD OF PUTTING NEW TREADS ON WORN TIRES

HIT-OR-MISS, by guess-and-by-gosh methods of recapping and retreading tires are things of the past. The Kraft System of Tire Renewing now guarantees uniform quality—*dependable* extra mileage—for truck operators everywhere.

In every Kraft shop in the country, the renewing operation is conducted under the same rigid factory controls. Each tire receives the same careful "Inspect-o-scope" examination . . . the same factory-specified methods every step of the way.

Only dealers for the General Tire are licensed under the Kraft System. They alone are set up to renew tires locally by the same methods used by tire factories. This proved method of getting the greatest possible mileage out of every sound tire body offers you the one sure way to reduce your tire costs and help conserve rubber. Visit or call your General Tire dealer today.

• • •

ACCURATE BUFFING

Tires found fit for renewing are buffed, to expose live rubber and to shape the tire. This is a very important part of the renewing process. It affects both the union between the new tread and tire body, and the balance of the finished tire. Complete factory training of operators and rigid factory specifications assure uniform, accurate buffing in every Kraft Shop from coast to coast. This is only one of 10 Kraft *quality* controls.

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THE GENERAL TIRE AND RUBBER COMPANY • AKRON, OHIO

(CONTINUED FROM PAGE 74)

or youngster mates (helpers). On the lighter vehicles, women have replaced the younger drivers. However, it is seldom that one sees a woman driving a vehicle in excess of 1½ tons; although in one or two country districts women are actually driving public buses, which weigh here around 7 tons.

Since the war, the authorities have waived the driving test formerly necessary to pass to secure a Heavy Goods Vehicle License; such license being now issued to any driver merely vouched for by a reputable operator. These licenses, however, are valid only for the duration of the war.

Before the war, the Ministry of Transport officials could enter any operator's depot, as well as stop any vehicle on the road, and require to be done any repairs they decided were necessary. The ministry's "stop" on such vehicle would not be lifted until the repairs had been carried out and inspected and approved by an official. But this right of the ministry was seldom exercised, and then only when a truck was in a really dangerous condition. Certainly this power has never to my knowledge been used arbitrarily. Since the war, such official "stops" are exceedingly rare, and their requirements much less rigid.

Oil Is Plentiful

There is no difficulty at all in getting oil, no permit or other formality being required, and stocks are ample. The only real difference is that whereas we used to buy in 5-gallon drums, to save tin-plate, the suppliers can now only deliver in 10-gallon drums, and that whereas before the war the drums were free, they are now charged to us (but the charge is credited back to us if the drums are returned).

Efforts have been made by government to encourage the use of producer gas, but so far with very little success.

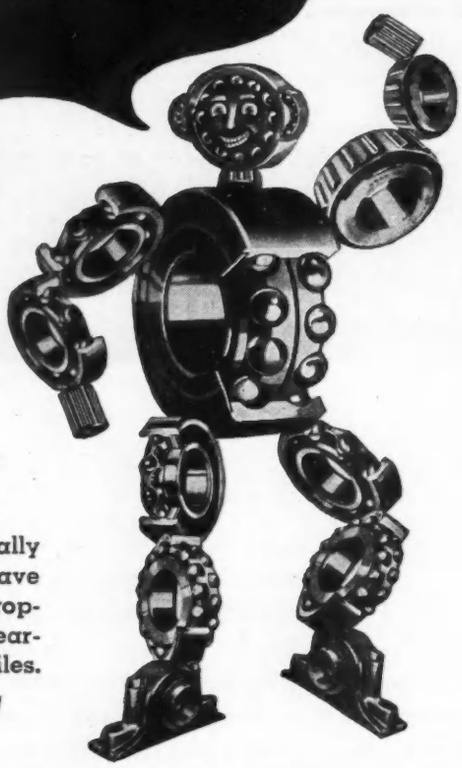
Many of the larger stores, laundries, etc., have changed over from petrol to electric vehicles for their light delivery services. As such deliveries are always within a restricted radius, they have been able to make this changeover very successful; but for transport operators, of course, electric vehicles are out of the question.

The quality of the petrol is more or less the same now as formerly, and we are getting approximately the same mileage to the gallon. Of course, there are no longer different brands of petrol, but one kind only.

The government has been experimenting with all manner of alternative fuels, and every encouragement is given to operators to use such fuels. However, even despite the war, and the consequent scarcity of petrol, the customs and excise authorities still ban the mixture of paraffin or gas-oil with petrol. This, naturally, is because of the loss of tax to the inland revenue that such adulteration would entail. We can use either paraffin or gas-oil (both unrationed, and in plentiful supply), but are prohibited from mixing either with petrol. Anyone diluting petrol with paraffin or other fuel is heavily fined, and there is an anomoly in the fact that the fines for such offense are much heavier today than before the war.

(TURN TO PAGE 78, PLEASE)

MAKE YOUR BEARINGS Smile



GOOD bearings and good lubricant are not the whole answer to good bearing maintenance. Proper equipment is vital, makeshift methods of washing and repacking only lead to grief.

Here are two inexpensive units that make proper bearing maintenance certain and easy. They're genuine Croft equipment designed especially for truck service. They will save time and labor and insure properly cleaned and packed bearings that spell long service miles.

Write today for a new illustrated bulletin just off the press.

TRUCK BEARING WASHER: Wash big ball and roller bearings quickly, thoroughly with this Croft-built Washer. Gun forces cleaning fluid in container all through bearing. Washer, also Packer, distributed by Your Ahlberg Jobber.

CROFT BEARING PACKER: Here's positive bearing lubrication in one simple operation. Sturdy packer, 5 lb. capacity, accommodates bearings to 7" O.D. Adapter for small sizes.

THIS SIGN IDENTIFIES YOUR AHLBERG JOBBER

Ahlberg Bearing Company

Manufacturers of CJB Master Ball Bearings

3025 WEST 47th STREET — CHICAGO — 30 WAREHOUSE BRANCHES

Out West it's PRECISION BEARINGS, INC. Los Angeles

Lindsay Structure furniture van, designed by Mr. Somers of the Somers Fireproof Warehouse and Van Co., Kokomo, Ind.

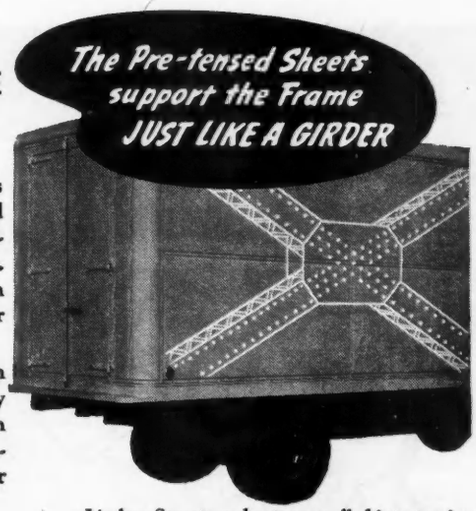
Weight reduced 40% . . . yet it carries 200 cu. ft. MORE

KOKOMO MOVER FINDS ALL-STEEL LINDSAY STRUCTURE IS ALSO EASY TO REPAIR IN CASE OF ACCIDENT

"Our new 4400-pound Lindsay Structure body has a carrying capacity of 1400 cubic feet. Yet this body weighs approximately 3000 pounds *less* than any other 1200-cubic foot body we have operated in the last quarter century."

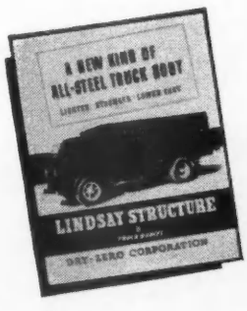
So writes Mr. Ted Somers, Manager of the Somers Fireproof Warehouse and Van Company of Kokomo, Indiana. This letter points out the remarkable light weight of Lindsay Structure bodies. Yet, Lindsay Structure provides great strength as well. Sheets are "pre-tensed" so that their full tensile strength is utilized in keeping the body rigid and tight. In case of severe accidents, Lindsay Structure bodies are easy to repair. Damaged sections can be replaced from the outside without disturbing other sections.

Low cost Lindsay Structure bodies can be assembled to within ½ inch of any dimension, in many attractive design combinations. Write, Dry-Zero Corporation, 222 N. Bank Drive, Chicago; or 60 E. 42nd Street, New York.



Lindsay Structure sheets are pulled into tension so they instantly resist wracking and distortion.

There is an AUTHORIZED Ls BODY BUILDER in your locality



Ls

REG. U. S. PAT. OFF.

SEND FOR BULLETIN

Shows how to save with Lindsay Structure all-steel truck bodies.

LINDSAY STRUCTURE
ALL-STEEL
Truck and Trailer Bodies

(CONTINUED FROM PAGE 76)

The Ministry of Transport's system of rationing petrol definitely encourages and favors the use of trailers, a generous additional allowance being given for these.

Generally speaking, transport rates since the war have increased by about 25 per cent. This is perfectly fair in relation to the higher charges and costs we have to meet. Our fuel supplies cost at least 25 per cent more, and wages have increased by 10 per cent. With the higher capital value of our fleet, annual depreciation likewise is proportionately heavier. War risks insurance costs us 5 per cent per annum on the value of our fleet, premises, equipment, etc., whilst all spare parts, oils, etc., have risen considerably. Also, as vehicles cannot now be spared off the road, repairs and overhauls have to be done week-ends and at night by mechanics who receive the higher over-time rates of pay.

Much work has been created for transport fleets in the removal of the complete debris of bombed structures. The sites are cleared level with the roadway.

All round, taking one fleet with another, I would estimate that transport vehicles do at least 25 per cent more work per week than before the war.

I and all members of my staff, administrative and operational, take our turn in fire-watching the depot at night. The black-out of a depot is not only very difficult to render it efficient, but also very costly. During the winter months, the general black-out lessens very considerably each working day, as it is impossible to load or unload in the open without any light. This sometimes means as much as three hours off our working day.

Even when in our depot, all vehicles must be immobilized before being left by their drivers. Each vehicle must be locked, and the ignition-key taken away; or alternatively, the ignition-key and the distributor rotor must be removed.

Well, I think I have covered most of our war-time problems and changes. The transport industry in this country is certainly doing a real job of work.

END

(Please resume your reading on p. 36)

STATION CY5Y

(CONTINUED FROM PAGE 39)

the best means at small costs of doing the work required.

To effectively cover the working area with a radio signal at the frequency wherein an allotment could be obtained, would require approximately 1 kilowatt of radio frequency energy. However, it was decided to proceed with a 400-watt station located in the company's headquarters building. This is a 10-story structure located in Montreal's downtown area, the roof steel being about 150 ft. from the street. On the top of it was erected a 110-ft. steel tower with footings 10 ft. square, mounted on a penthouse. In each tower leg a removable section was inserted. This section was for the purpose of adding tower insulators if required at some future time. At present it has not been found necessary to insulate the tower, though the change to field pattern with an insulated tower is still a matter for contemplation.

The tower is now operating as a

THEY'VE QUIT CALLING ME

THANKS TO MY GREY-ROCK JOBBER

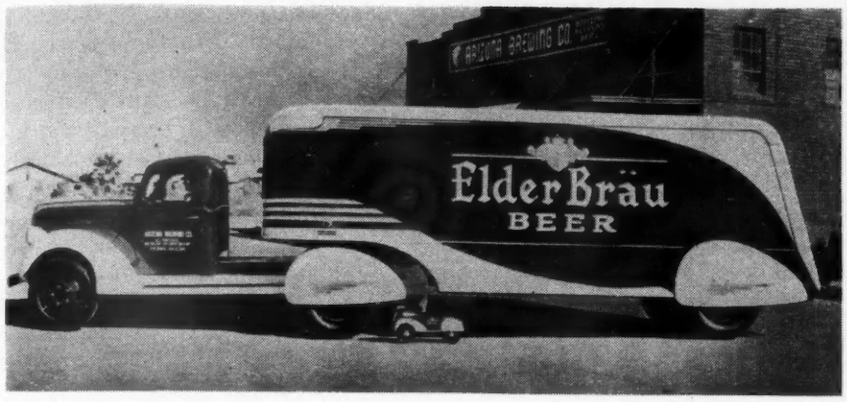
Every truck scheduled to the limit. In the shop and out again with hardly enough time to do the job right. A couple of my best mechanics in the service and my top machinist off to a 'plane factory. Was my brake-servicin' job a honey!

GREY-ROCK JOBBER TO THE RESCUE

He says "Whoa-up a minute. First thing is to make your green hands follow this National Safety Council routine on every job. Then you'll know they're missing nothing"—and he gives me a Grey-Rock Manual.

CUT THE WASTE MOTION

Then he shows me 72 pages of diagrams, adjustments and instructions and says, "Any smart guy can get first-class brakes on *any* vehicle with these Grey-Rock Engineering Methods."



Arizona Brewing Co. of Phoenix claims to be the only brewing company in that semi-parched state and also sports ultra-modern equipment as evidenced by this modern Ford-Fruehauf rig

shunt-fed grounded quarter wave length radiator, fed at about 40 ft. from the roof steel from an antenna tuning unit. The tuning unit is mounted on the roof steel and is fed from the transmitter proper with an open wire feeder, not transposed. The transmitter itself is located on the third floor of the building, and is remotely operated from the headquarters of the Trouble Department, one floor below. The transmitter was designed to give reasonable quality and full modulation of a 400-watt carrier, using standard tubes of air-cooled design.

The signals are heard over the greater part of the island in ordinary automobile installations. However, signals fall off very rapidly in daylight, beyond the 25-mile range. The receiving set is carried on the dashboard of the car or truck and is fixed-tune crystal control. The antenna is mounted at the left side of the car, outside the cowl, so that the driver may conveniently raise or lower it. Obviously, the antenna is kept low in city driving, to reduce the city noises in reception, and is raised for service over longer distances from the broadcasting point. There are now approximately 40 trucks, from lightweight half-ton to the 5-ton heavy line vehicles, so equipped.

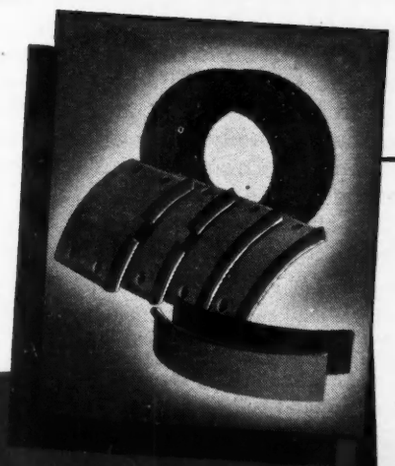
Experience thus far has shown that all such cars should have heavy-duty equipment initially. Automobiles and trucks when so specified can be obtained completely wired with shielded ignition cable, over-size high amperage batteries and heavy charging-rate generators. This heavy-duty equipment is commonly described in the phrase, "Wired for Police Radio." If the cars are so specified when newly purchased, the additional drain on the automobile battery of the radio receiver set is automatically provided for and service from the car is much more satisfactory.

All new MLH&P vehicles are now

(Turn to Page 80, Please)

"BOTTLENECK JONES"

THEY'RE ROLLIN' NOW
Finally he says "Stop experimenting with brake lining. Grey-Rock engineers have exactly the right linings for every vehicle in every kind of service—all proved performers, all factory specified sets." He was right.



HERE ARE THE PRODUCTS that keep this operator's fleet rolling and will do the same for you.

Grey-Rock Bolt-On Blocks for heavy jobs—HiWaY BloX (rigid woven) and Grey-Rock Blox (molded) for lighter jobs—and Vee-Lok Clutch Facings for every vehicle in your fleet.

See your Grey-Rock Jobber.

Grey-Rock BALANCED TRUCK BLOCKS

UNITED STATES ASBESTOS DIVISION of Raybestos-Manhattan, Inc., MANHEIM, PA.
BRAKE LININGS • CLUTCH FACINGS • FANBELTS • AUTOMOTIVE HOSE • RELINING EQUIPMENT

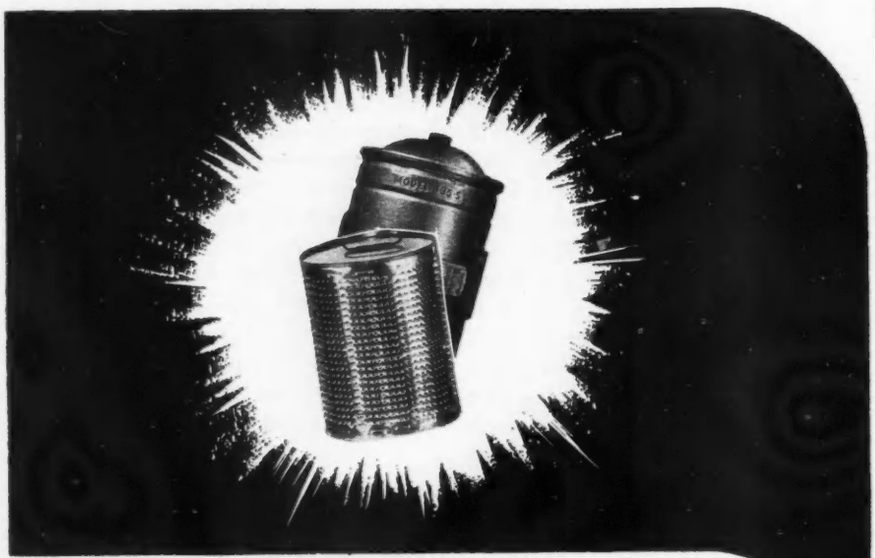
(CONTINUED FROM PAGE 79)
purchased with radio installation in mind, and come equipped with this heavy-duty installation from the factory. As the radio-equipped vehicles are garaged, a semi-weekly check is made of the radio installations. This is done by a repair man at the garage who uses a crystal control modulated signal generator and a dummy loud speaker, to which is attached an output instrument. To roughly check the operation of the receiving sets it is only necessary to set the signal generator at a fixed value and hold the test loud speaker directly over the speaker in the receiver, measuring the output. This audio coupling gives a fair measure of the efficiency of the receiving set and using this method it is unnecessary to undo any connections in the receiver itself for rough checking. The receiving sets are of a semi-plug-in type and on any installation requiring maintenance a spare receiver is plugged in and the car proceeds on its way.

Our broadcasting station has been in service since April, 1938, with as a beginning, 20 cars equipped with receiving installations. During the day there are time signals given on the hour, unless a transmission has occurred immediately previously. This is for the purpose of checking the operation of the receiving sets, which are equipped with squelch circuits and operate as if dead.

Radio Station CY5Y is used to notify a particular vehicle that it should call headquarters. The call in this case simply states, "Calling Car Number . . ." repeated three times. These instructions are taken to mean that the vehicle called is to proceed to the nearest paystation and call headquarters via Bell Telephone circuits. It is done in this manner so that any broadcast listener may not interpret the call. It is felt that if the general public were notified via broadcasting of certain conditions there might be a tendency toward "ambulance chasing." In other instances where it is known that the car called is waiting for instructions via radio, these broadcasts are given as definite assignments and telephone calls to headquarters are unnecessary until the job has been completed. There are some variations of the foregoing, though in general the working is much as described.

Some of the company's cars, operating in seven or eight different city districts, have only one driver. If an emergency should arise in District No. 5, for instance, a call is put out for the car in that district. It is the duty of the Service Desk to determine if the customer's complaint is of sufficient importance to warrant a radio call; if so, we then make one or two calls for the car in the district involved. Failing to receive a proper reply, calls are then made for men in adjacent districts. In this way the calls are never unanswered, but in some instances the

(TURN TO PAGE 82, PLEASE)



Announcing the New
LUBER-FINER DIESELPAK
for use with COMPOUNDED OILS

Again Luber-finer keeps pace with the oil industry!

Now, in addition to the Luber-finer Standard Refining Pack, you are offered the new Luber-finer DIESELPAK designed expressly for use with *compounded* oils. In addition to accomplishing the functions of the average filter, it is designed to remove colloidal particles, soot, etc., without materially removing or adversely affecting the compounds or additives in Compounded Engine Oils. The Luber-finer Dieselpak was developed under the personal direction of Dr. U. B. Bray, B.S., Ph.D., F.A.I.C., nationally recognized oil authority, whose most recent efforts have been devoted to *development* of the new *compounded* oils.

Exhaustive field and laboratory tests indicate that the new Luber-finer Dieselpak is as efficient in its own field as is the Standard Luber-finer Refining Pack, which is used on all types of installations the world over. DIESELPAK is approved by major oil companies and oil engineers.

For complete details, write for descriptive technical bulletin.

LUBER-FINER, INC. Luber-finer Refines Oil EVERY MILE as you drive LOS ANGELES

Pilot wheels are raised or lowered automatically so this Dodge truck can be used on either rails or road by two industrial plants at Lawrence Mass.

"AUTO-LITE HELPED ME CUT BATTERY COST IN TWO!"

WILLIAM W. KUNZ, Master Mechanic of the International Railway Company, Buffalo, New York, tells his experience in the June issue of Bus Transportation.

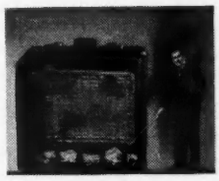
"FROM our experience, I am convinced that careful measuring of battery value will help any operator cut costs," writes Mr. Kunz in the June 1941, issue of Bus Transportation in an article which tells of his remarkable experiences with Auto-Lite Batteries. "It was this plan of operation which caused us to adopt Fibre-Glass. We have already reduced our battery cost close to half, and so far there has not been one failure of a Fibre-Glass-built battery."

Two revolutionary developments have helped contribute to the sharp cost reductions secured by Mr. Kunz. "Activite," a remarkable new kind of power-producing material, is literally packed with extra power—and Auto-Lite Fibre-Glass, porous mats of closely packed glass fibres, prevent "shedding," the major cause of storage battery failure.

It will pay any bus or truck operator to investigate Auto-Lite Batteries—to find how Auto-Lite's scientific advancements can help you get as much as double ordinary battery life. Get the complete details. Ask your dealer, or write direct to

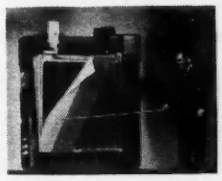
USL BATTERY CORPORATION
A Subsidiary of The Electric Auto-Lite Company
NIAGARA FALLS, NEW YORK
Manufacturing Plants at: NIAGARA FALLS • INDIANAPOLIS
OAKLAND • OKLAHOMA CITY • TORONTO

HERE'S HOW ORDINARY BATTERIES USUALLY WEAR OUT

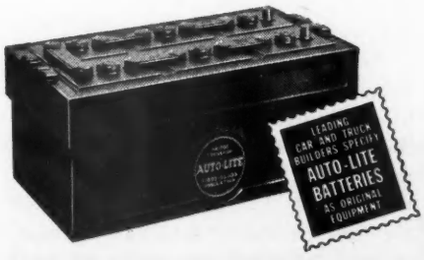


—the positive plates shed their power-producing materials, growing progressively weaker until power fails entirely.

AND HERE'S HOW SHEETS OF FIBRE-GLASS HOLD "ACTIVITE"



—the amazing power-producing material, in the plates, to deliver full power long after other batteries wear out.



AUTO-LITE BATTERIES

ENGINEERED AS A BALANCED UNIT OF THE ELECTRICAL SYSTEM

(CONTINUED FROM PAGE 80)
one car in the district in which the emergency has arisen does not hear his signal due to his being occupied in the customer's premises. However, his emergency call is handled by his associate from an adjacent district.

During the course of the past year's operation a number of interesting incidents have occurred in obtaining extremely fast emergency service in cases of wires down in dangerous conditions, major gas leaks and the like.

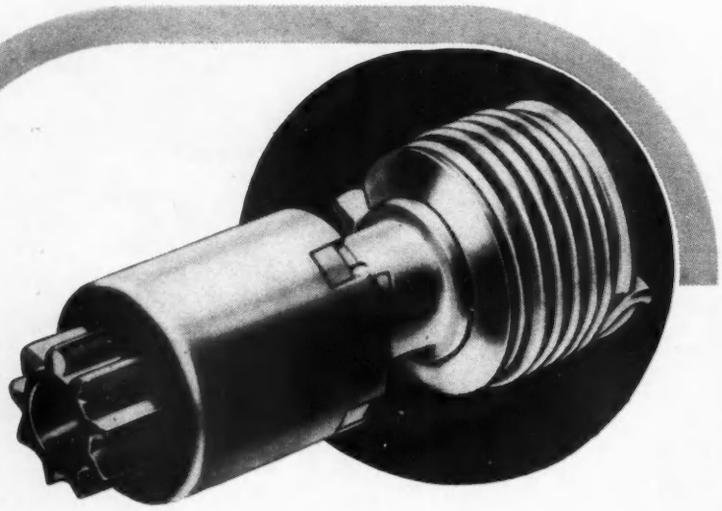
Some time ago a call was received in our emergency headquarters for an inhalator at a given address. These calls are handled with the utmost speed and within a half minute a high-speed emergency vehicle with road right-of-way was dispatched to the scene. The address given was in the 3400 block of a certain street *East.* The vehicle had been on the road for some five minutes when a second call to our emergency headquarters from the police corrected the address to the 4300 block *West.* This change represented some five miles of traveling; however, by radio we were able to contact the car in motion and correct the address without much loss of time, and we undoubtedly prevented a fatality. This is merely one of many instances that occur in routine operation of our station. Others have arisen where a live wire has been down near a playground area; an emergency vehicle, which was returning from a previous call was contacted, given the address over the air, a heavy line truck with repair equipment was dispatched to the job, the live line was cleared from damage by the emergency vehicle and permanent repairs were started within 10 minutes.

Taking into consideration that when a call is put in for a certain car, this car must find a telephone to contact its headquarters, the average time of response is considered quite good, about six minutes. In the case of departments that have more than one man in each car, the average time of response runs about three minutes. Including the time signals the total transmissions are now about 9000 per year and during stress periods such as electrical storms, wind and the like, the number of transmissions may go as high as 40 calls per day, exclusive of the time signals. (See the statistical matter in the 1940 chart on page 39.)

Perhaps the most common routine assignment by radio with us is for a line construction truck to meet a general foreman at a certain location at a predetermined time. This gives the line foreman time to clear the work he is at present handling and to prepare himself for a rush job at a given time. Other assignments are the recalling of emergency apparatus on false fire alarms, the correction of addresses on emergency calls, etc. In the Gas Department many of the calls are for general foremen or heavy construction trucks after major gas leaks may have been located, or for an emergency such as a fire in which the gas mains may be involved.

Two-way transmission is now being discussed for a limited number of emergency vehicles, especially those that do electrical switching and those used for general emergency work. The geographical location of the City of Montreal does not, however, lend itself favorable to two-

(TURN TO PAGE 84, PLEASE)



EVERY GOOD START
RENEWS *good will!*

Because the Bendix Drive has been made an integral part of more than sixty million engines ... designed *into* those engines by capable, conscientious factory engineers... there is no question of Bendix Drive quality and efficiency.

Then isn't it reasonable to assume that the safe and sure way to renew or repair any of those sixty million Bendix Drives is to replace worn parts with time-proved genuine Bendix parts?

No other concern either knows as much about building Bendix Drive parts, or has so much interest in protecting the good reputation of Bendix Drive. When you sell or install parts in a Bendix Drive, or replace it, *your* reputation goes on trial with the job. Every good start, thereafter, renews good will *for you.*

Renew with
GENUINE
BENDIX
DRIVE
PARTS

ECLIPSE MACHINE DIVISION
OF BENDIX AVIATION CORPORATION
ELMIRA, NEW YORK

BENDIX DRIVE

SERIES DJX

6

Now Available

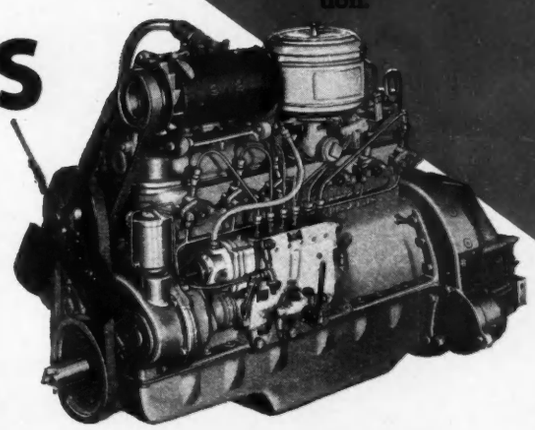
IN A COMPLETE POWER PACKAGE

HERCULES

SIX CYLINDER DIESEL ENGINES for FORD and CHEVROLET TRUCKS

SERIES DJX — as engineered for Ford Truck application.

SERIES DJX — as engineered for Chevrolet Truck application.



A time-tested 6-cylinder Hercules Diesel Engine, engineered for ready installation in 1940, 1941 and 1942 ***Conventional*** Model Ford and Chevrolet Trucks! Following up the successful Hercules 4-Cylinder Diesel Power Package Replacement Units (over 3500 of which have been installed in Ford Trucks alone) Hercules now makes available to fleet owners and truck operators the powerful, flexible Series DJX 6-cylinder Diesel engine that, since the inception of high-speed, heavy-duty Diesels, has made low-cost trucking history! Internationally famous for dependability and operating economy, thousands of Series DJX Hercules Diesels are in successful operation in various types of commercial vehicles, tractors and other heavy-duty operations.

In making this engine available for Ford and Chevrolet Truck use, Hercules broadens the scope of Diesel benefits—brings to truck operators and fleet owners new opportunities for cutting haulage costs.

Full information is yours for the asking. Please write the factory.

HERCULES MOTORS CORPORATION
193 11th St., S. E. Canton, Ohio, U. S. A.

TWO SIZES

This 6-cylinder Power Package Unit is available in two sizes—Model DJXB, $3\frac{1}{2}$"x$4\frac{1}{2}$", and Model DJXC, $3\frac{3}{4}$"x$4\frac{1}{2}$" —the smaller engine is for use with standard axles, clutch and transmission. The larger engine is for use where load conditions necessitate special axles, etc., and where extra torque is required.

(CONTINUED FROM PAGE 82)

way transmissions, using ultra-high-frequency, primarily because there is a high mountain (Mount Royal, 650 ft.) located in the center of the island. This means that it will be necessary to install three or four receiving locations so situated that the transmission from any given car will never be blocked by the mountain. On the headquarters-to-car frequency, 2238 kc, the mountain offers some shielding, but is not a blanket.

The operation of this service has been highly successful both from an engineering and a commercial point of view. Statistics and methods quoted and described herein are to be taken, we at MLH&P believe, as substantial proof that radio dispatching for power companies in congested metropolitan areas has passed the stage of a convenience merely, and is now a necessity.

The cost of the MLH&P radio installation, which is entirely the product of Canadian Marconi Company, Limited, of Montreal, is considered moderate, service considered. The transmitting set cost roundly $2,000, and car receiving sets are installed at $85 each. The cost of the mast erected on top of the power building is set at not more than $1,200.

Certain questions have been asked, of which the following are somewhat typical:

"Why is the radio system better than having maintenance and emergency crews call headquarters by telephone for further instructions when assignments are completed?"

"Does the radio provide a time-saving?"

"Does it provide a monetary saving?"

Let me try to answer these briefly:

Let us suppose our line crews are at work in a residential section of the city, stringing wire, repairing crossarms, picking up slack; in other words, doing general maintenance. Perhaps the questioner himself might quite properly object to admitting the line foreman with his heavy muddy boots, his raincoat and safety belt, dragging into a house to borrow a telephone to call headquarters every half hour. If the line crews are working near a Bell Telephone pay-station these facilities are provided. In any case the line foreman should not have to quit his work and telephone in each half hour, so the radio does provide a convenience and a time saving. We at MLH&P have not thus far been obliged to be especially interested in, and there have been no figures compiled to show, any direct monetary saving. However, the best recommendation we have had on the radio equipment and service is the statement of the Superintendent of Distribution to the effect that every future maintenance, line construction or other service truck shall be designed for radio equipment.

END

(Please resume your reading on p. 40)

★ Heil 3 cu. yd. Dump Body with side-boards and Model DA6 Heil Hoist

Look for the HEIL Quality Trademark
—widely recognized in the industry as a guarantee of all-around satisfaction on Bodies, Hoists and Tanks

★ *Above:* Heil 5½ cu. yd. Coal Body with No. 4 Heil Twin Cylinder Hoist.

★ *Below:* Heil Trailerized Train of two 5000 gallon, two-compartment tanks.

For truck equipment of all types and capacities, successful fleet operators look to Heil. Heil offers the *right* units to do the job *right*, from its *complete* line. And Heil provides *nation-wide service* — a substantial distributing organization that accepts full, undivided responsibility for all it claims. Rely on the years of experience behind the Heil Quality trademark. Get Heil recommendations on your next equipment order . . . *Write for* colorful Heil Equipment Manual.

If you are not receiving the "Heil Quality News," send us your name so we can mail you free copies regularly.

MILWAUKEE WISCONSIN **THE HEIL CO.** HILLSIDE NEW JERSEY

The 3-yd. high discharge type mixer mounted on a Mack EQ chassis permits longer, steeper chutes for unloading and eliminates pushing on drier mixes

Across the Continent

This fleet of 450 DeSoto Taxicabs was driven in caravan from Detroit to California, filled at the start with Thompson *Aerotype* Break-In Oil.

THEY USED

Thompson *AEROTYPE* BREAK-IN OIL FOR EXTRA PRECAUTION

during the critical break-in period, and in regular maintenance service, in these

450 DESOTO TAXICABS

Get it from your T.P. Jobber! SAE 10 and 20 grades—50 for aircraft. Made exclusively for

THOMPSON PRODUCTS, INC.
CLEVELAND · DETROIT · LOS ANGELES

Yellow Cab Company

SAN FRANCISCO OAKLAND HOLLYWOOD LOS ANGELES

245 TURK STREET · *San Francisco, California* · TUXEDO 1234

Yellow Cab Co.

June 2, 1941

Thompson Products Company
2196 Clarkwood Road
Cleveland, Ohio

Attention Mr. Russ Veilleaux

Gentlemen:

After using Thompson Break-in Oil S.A.E. 10 for a period of three months or approximately 10,000 miles on our new fleet of 450 DeSoto taxicabs, I can truthfully say that it has met with our every expectation.

As you are already aware, we caravanned these 450 units from Detroit to California, draining the original o&l at Detroit and filling with Thompson Break-in Oil. It is our opinion that this extra precaution on our part will add considerable miles between motor repair periods and also greatly contribute to economical operation. Our consumption of oil by the use of this product has proven very satisfactory.

It is my hope that in the near future and with a greater number of miles on this equipment, we will be able to furnish you a more specific statement of costs per mile, comparing units which have and have not used Thompson Break-in Oil.

Sincerely yours,

Lewis A. Schroyer

LEWIS A. SCHROYER
Supt. of Maintenance

LAS/

Thompson *Aerotype* BREAK-IN OIL

"EASY ROLL" TRAILER AXLE

(CONTINUED FROM PAGE 40)

tion bearings of the inner hub. However, the outer wheel is free to rotate independently when the vehicle turns a corner or is on curve or when road crowning or other surface conditions make it necessary to have a differential movement of the two wheels.

The outer spider is fastened to a short torque shaft which extends through the hollow supporting spindle and drives the brake drum located on the inner side of the spring seat. To provide clearance for this drum, two cross channels are used to connect the two sets of wheels and their supporting members. Of particular interest is the dual function of the torque shaft fastened to the outer wheel. The outer end is provided with a flange to which the hub face of the outer wheel is securely fastened. The inner end of the shaft is housed in a sealed, anti-friction bearing, supporting the free end of the shaft. The shaft thereby acts as a lever, holding the outer spider in a perpendicular position, thus preventing any uneven stresses in the spider or uneven pressure on the bushing.

There is said to be no scuffing of tires when rounding a corner or curve, and no stalling of motors when maneuvering in confined places such as docks, transfer yards and sharp mountain curves. The quadruple braking system causes the tires to come to a rolling stop regardless of their individual speed, or the character of the road surface since they are never locked together, either before or during the application of the brakes.

An important feature of the braking system is the use of four 16 in. drums. The location of the brake drums, allowing for free circulation of air, saves brakes, drums and tires. The four 16 in. x 3 in. brakes are equal in area to two 17¼ in. x 5.6 in. brakes. The 402 sq. in. of brake lining is equal to one square inch for every 40 lb. of vehicle weight, or the rated weight on this axle.

Adoption of narrow brake drums provides a stronger and more rigid construction since the drums are not so prone to bell-mouth upon heavy brake application. The latest type of cam—½ in. constant lift—is employed.

According to the manufacturer, the new "Easy Roll" trailer axle affords the following advantages:

1. The independently rotating wheels increase tire life by eliminating drag or scuffing on curves, or on irregular surfaces.
2. Relieves the stress between the dual tires, thus reducing internal tire friction and tire temperature.
3. Removes strain and overload on rim mounting parts, thus preventing rim from coming off.
4. Allows free accessibility to the valve stems at all wheel positions, thus permitting easy and rapid inspection, or tire inflation.
5. Eases maneuverability of the trailer, whether single or tandem axles are used.
6. Improves gasoline mileage.

END

(Please resume your reading on p. 42)

TRACTION Speeds DEFENSE!

THORNTON FOUR REAR WHEEL DRIVE

Today the eyes of the world are on America!

The prestige of our nation depends on the speed and effectiveness of our Defense program.

In these vital times not only our moral and physical fiber must meet the test, but we must measure up in sheer ability to handle the jobs assigned to us.

Tough assignments are nothing new for THORNTON four rear wheel DRIVE. For years they have helped solve transportation problems both on and off the highway. They have proven their worth in meeting stiff requirements where loads are heavy and the going is rough!

It is not surprising to find thousands of THORNTON-equipped trucks in the thick of the struggle. They are actually on the fighting front in many parts of the world. Right here at home they are doing their bit not only in military vehicles but for the all-important job behind the lines in the construction of army, navy and airplane bases, highways, factories and the transportation of vital supplies.

THORNTON TANDEM CO.
8715-8779 GRINNELL AVE. DETROIT, MICH.
Manufacturers also of the THORNTON automatic-locking DIFFERENTIAL
"When you need TRACTION you need THORNTON"

The San Joaquin Baking Co. transports 8820 loaves of bread in this White tractor-Fruehauf trailer combination on its daily run between Fresno & Modesto, Cal.

Armstrong Cork Appointments

The Armstrong Cork Co., Lancaster, Pa., has announced the appointments of M. J. Warnock as director and E. Cameron Hawley as assistant director respectively of Advertising and Promotion.

Clutch-Release Bearing Is Self-Lubricated

A new clutch-release ball bearing with a patented self-lubricating action has been introduced by the Chefford Master Mfg. Co., Fairfield, Ill. Called "Lubro-Life," the bearing comes ready packed with lubricant to last the life of the bearing. The lubricant is gradually fed from the reservoir through lubricating holes to the ball track as the bearing warms up from motor heat. When the bearing cools, the lubricant contracts, drawing in air bubbles which, in turn, expand when the motor heats up, automatically forcing more lubricant into the track. The addition of 50 per cent more balls is said to provide freer action and longer life. The new bearing is interchangeable with other makes and is now available for Ford, Chevrolet and Plymouth.

King Tester

A new streamlined Unit Tester known as the "KING" Type WH-450 has been introduced by the Electric Heat Control Co., 9127 Inman Ave., Cleveland, Ohio. Incorporated in the new tester are the following KING units each of which may be used separately for bench tests, road tests or various tests in any part of the shop: (1) Ignition-Coil and Cam Dwell Tester. (2) Oscillator Type Condenser Tester. (3) All-Electric Spark Plug Tester. (4) Exhaust Gas Analyzer with dual vacuum fuel pump test. (5) Electro-Techometer (R.P.M. Indicator). (6) Voltage Regulator-Generator Tester.

Delco-Remy Handbook

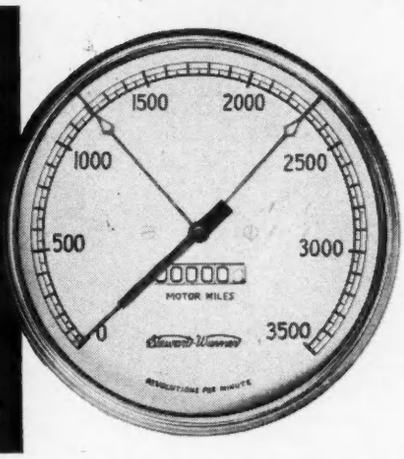
Delco-Remy has a new eighth edition of its popular Operation and Maintenance handbook (DR-324). The new edition contains all the information found in earlier editions, plus specifications and servicing information on late type Delco-Remy automotive electrical equipment. There are 144 pages illustrated with more than 200 cross-sectional drawings, wiring diagrams, and graphs which picture the various types of Delco-Remy electrical equipment, how they operate, and the service checks and adjustments they may require. Any electrical service man will find this handbook of real value in his work. Copies may be obtained from United Motors Service, 3044 West Grand Boulevard, Detroit, Michigan, for $1.00 each.

THE DEFENSE PROGRAM MAY MAKE NEW TRUCKS VERY HARD TO GET . . . I'M TAKING CARE OF WHAT I HAVE!

TRUCKS STAND UP LONGER when serviced on a basis of MOTOR MILES!

Let this Amazing MOTOR MILE TACHOMETER

√ lengthen truck life
√ cut repair expense
√ cut fuel and oil expense



THERE'S no knowing how long you'll have to drive your *present* trucks! *Keep them rolling in top condition*—with lower maintenance cost—with lower fuel cost—by installing Stewart-Warner Motor Mile Tachometers!

Actual records of users show that such savings result from *knowing the power and economy range* and keeping the motor speed within that range—and by servicing trucks on a basis of actual motor miles instead of speedometer miles!

Drivers appreciate the ease of keeping the motor speed indicator between the two red pointers which indicate, at all times, *the limits of the economy range.* They like the better performance records of trucks which are equipped with the Stewart-Warner Motor Mile Tachometer. Mail the coupon today for complete information!

STEWART WARNER
MOTOR MILE TACHOMETER
STEWART-WARNER CORPORATION
1876 Diversey Parkway • Chicago, Ill.

STEWART-WARNER CORPORATION
1876 Diversey Parkway, Chicago, Ill. Dept. I

I operate .... trucks. Please give me all the facts about longer truck life and lower operating costs with Stewart-Warner Motor Mile Tachometers.

Name .....
Address .....
City ..... *State* .....
Firm Name .....

Readers Pay to the order of

CHILTON AUTOMOTIVE PUBLICATIONS

$259,000

ANNUALLY

for AUTOMOTIVE PUBLICATIONS and SERVICES

Subscribers to Chilton Automotive Publications and Services pay more than a quarter of a million dollars every year, to read and refer to AUTOMOTIVE INDUSTRIES, MOTOR AGE, the CHILTON FLAT RATE & SERVICE MANUAL, the CHILTON BODY & FRAME MANUAL, and COMMERCIAL CAR JOURNAL.

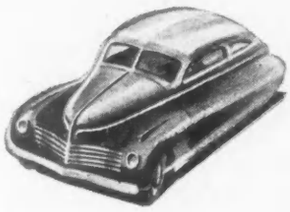
That averages $3.00 per reader, excluding the truck fleet distribution of Commercial Car Journal and Chilton Automotive Buyer's Guide circulation, which is controlled.

We mention this largely to bring to your attention the fact that first of all CHILTON Company is in the publishing business, as compared with some publishers who may first of all be in the *advertising* business.

Please NOTE: Chilton Flat Rate & Service Manual and Chilton Body & Frame Manual do not carry advertising.

CHILTON AUTOMOTIVE PUBLICATIONS
and Services
Chestnut and 56th Streets Philadelphia, Pa.

Firing Power!



in the Air
. . . in your Car

Ignition cable with a conductor of *stainless steel* is today's accepted standard for Uncle Sam's air forces . . . *it means firing power at the plugs for air power on the wing.*

This same modern aviation-type ignition cable, with the same advantages for super-performance, is available for every car or truck on the highway in *Auto-Lite Sterling Steelductor*. Having the same fine stainless steel conductor, low capacitance and long-lived insulation it delivers a firing charge to the plugs on lower battery voltage. Steelductor makes winter starting easier, gives motors higher top speed, smoother idling and greater gas economy wherever spark plug wires are carried in metal conduits or guides. Plugs and points have longer life.

Improved ignition means many maintenance savings. Ask your jobber for Steelductor on your next rewiring job.

THE ELECTRIC AUTO-LITE COMPANY
WIRE DIVISION • PORT HURON, MICHIGAN

Available in spools or kits, and in tailored sets for cars and trucks.

AUTO-LITE *Steelductor*
IGNITION CABLE
The Modern Aircraft Type Stainless Steel Spark Plug Wires!

RELIABLE RELIES ON SELF SERVICE

(CONTINUED FROM PAGE 37)

check hose for breaks in places where they pass through or come in contact with metal parts of tractor and trailer, to spot leaks or hose kinks and shut off the air.

As tires represent one of the important operating costs, pressure is checked regularly each trip in and out, and an inspection for possible cuts or breaks is made. Under this careful checking slightly more than 50 per cent of the worn casings can be turned in for recapping. The company's records on recapping show an average mileage of 75 per cent or better of that obtained on original new rubber, and an average cost saving of 50 per cent. Tires are turned in for recapping after being worn smooth, and before breaker strips show, to get best operating results and highest mileage economy.

"We go over each motor for complete tune-up weekly when the units are being greased" said Meyers, "checking timing, sparkplugs, valve tappets, water pumps, distributors and coils. This check-up is done wholly on a new portable analyzer and since its installation we find not only better results in accuracy, but the time it saves is well worth while. Valves are re-seated by the wet process on a new precision machine which operates automatically. A few records up to 120,000 miles without regrinding have been achieved, but the average ranges at 25,000 miles. Stones for different size valves are in the equipment and no valve compound is required—water pours over valve and stone without creating heat and valves and seats are ground to a mirror finish."

On the modern truck units which range between two and three-ton jobs, it is rarely ever necessary to re-ring a motor simultaneously with the valve-grinding process. "This is a needless expense unless the gasoline consumption is increasing and analyzer tests show it necessary," Meyers pointed out. "The biggest percentage of our equipment has replaceable sleeves. We put in new rings at approximately 100,000 and another set at about 70,000—then start over again with new sleeves and pistons.

"When the sleeve and piston replacement is made we check-up on the crankshaft for wear and the connecting rod bearings and bushings. Engines that are not sleeve type are rebored and over-size pistons installed when the wear justifies the job. We do not have enough of that to determine the actual mileage on this type of job."

Wheels are removed to inspect wheel bearings and brakes at approximately 25,000 miles. At this time if brakes show some wear but have con-

(TURN TO PAGE 94, PLEASE)

This heavy duty Diamond T dump truck owned by S. Clique & Sons, New Haven, won a photograph contest sponsored by Diamond-T. It has a 7-yd. body

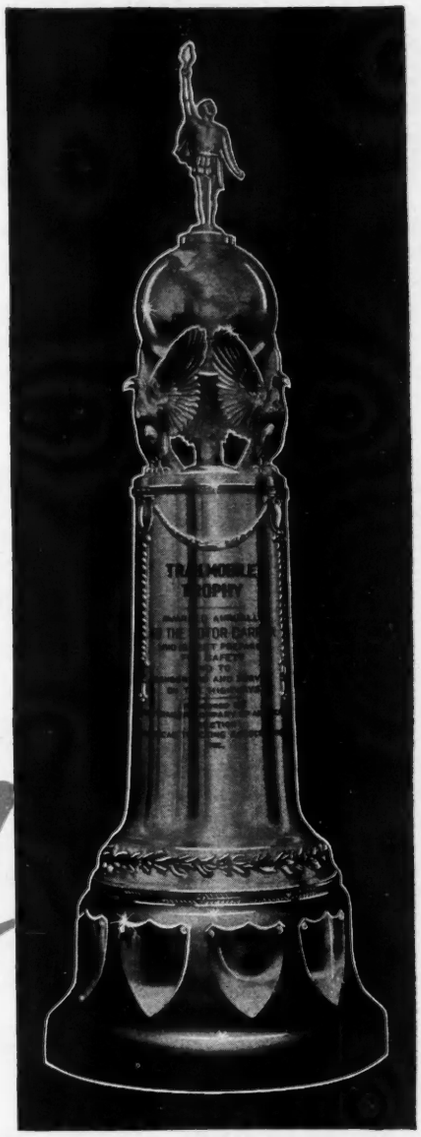
LINK-BELT
SHAFER
ROLLER BEARINGS
FOR FRONT WHEELS, DIFFERENTIALS AND REAR AXLES

YOU buy a bearing first on its rolling qualities and secondly by its wearing ability. This Link-Belt roller bearing excels in both by a tremendous margin. Why? . . . Because it is built on an exclusive principle—with concave rollers and convex raceways—which assures smoother action for longer mileage. Prove this better performance yourself by replacing the bearings in your next job with Link-Belt. Your jobber will supply you!

9576

LINK-BELT COMPANY
519 N. Holmes Ave., Indianapolis, Ind. Warehouses in all principal trading centers
Made by the makers of the famous Silvertreak Silent Timing Chain

Medal of Honor



FOR DEFENSE OF THE TRUCKING INDUSTRY

AWARDED annually to the carrier with the finest record of service to the public, the Trailmobile Safety Trophy has become the Trucking Industry's Medal of Honor.

It is a wholesome incentive to all employees of the Trucking Industry. It encourages reliable men to perform their duties in a manner that wins public favor and defends the Trucking Industry from attacks by unthinking, uninformed critics. At this critical period of American history, every carrier should participate.

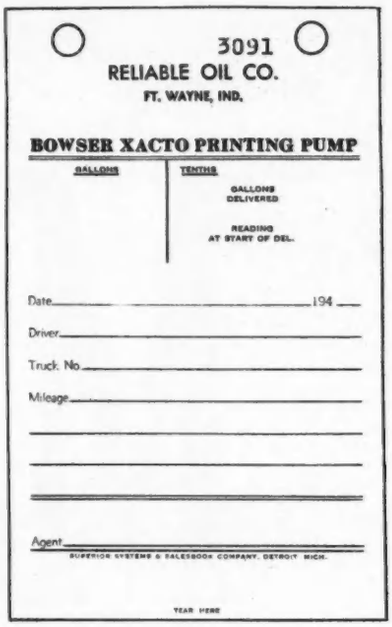
Complete details of the 1941-42 contest may be obtained from the American Trucking Association, from Trailmobile, or from any of its representatives. Participation will bring tangible benefits to your employees, to yourself, to your industry. This is the chief objective — the honorable purpose of the Trailmobile Safety Trophy.

TRAILMOBILE

THE TRAILER COMPANY OF AMERICA
Cincinnati, Ohio

(CONTINUED FROM PAGE 92)
siderable mileage service left, the lining condition is noted and closer check-up on it is made thereafter until new linings are required. Drums are sent out to authorized brake stations for necessary reconditioning and brake shoe exchanges. Under these methods mileage for brake lining ranges between 75,000 and 100,000 depending upon the driver's skill and care of brakes which is also governed to a considerable extent by the routes and the drivers' familiarity with the roads. Trucks employed on "wildcat" runs (over unfamiliar roads where hills and curves prevail) have shorter brake lining life requiring closer check-ups and more frequent replacements.

The management guards its gasoline consumption like a banker guards his money. The special gasoline printing pump installed at the garage where all units get their supply, will not function until the printed record slip is inserted. This new pump records like a cash register, the exact number of gallons or fractions thereof, together with reading at start of delivery—the date, driver's name, truck number and speedometer reading are filled in with pencil by attendant. This method not only affords a permanent cost record of gas consumption for each truck, but promotes economy in the nature of a double check-up revealing the need for motor reconditioning when consumption gets beyond the regular average.


3091

RELIABLE OIL CO.

FT. WAYNE, IND.

BOWSER XACTO PRINTING PUMP

GALLONS | TENTHS

GALLONS DELIVERED

READING AT START OF DEL.

Date _____ 194__

Driver _____

Truck No. _____

Mileage _____

Agent _____

SUPERIOR SYSTEMS & SALESBOOK COMPANY, DETROIT, MICH.

TEAR HERE

Form on which the gasoline pump record is printed

One of the important factors which has helped this organization, which started 13 years ago with one delivery truck, to build it up to its present size of 35 major units and three salesmen's cars, is immaculate cleanliness of equipment. It is even more important today, the company declares, hence one man is engaged on full time to wash and polish cars. There is no set time for these operations—it is done whenever needed. One end of

(TURN TO PAGE 96, PLEASE)

Same customer, same salesman, same make of truck. Twenty-three years ago Bert Sparks sold John G. Kain a White truck and replaced it in 1941

"Just what I need for faster tune-ups"
Snap-on
TUNE-UP SET
Simplifies Testing — Speeds Service
With these three tools any mechanic can quickly tell "what's wrong with a motor, and *where*", he can shorten tune-up time, turn out sweet-running jobs that bring more business. Furthermore, each tool is a *dependable, precision* instrument. The vacuum gauge and motor analyzer accurately detects a wide range of engine troubles from leaky manifolds to weak valve springs . . . the compression gauge "holds" the highest reading exactly until release button is pressed . . . the neon timing light has lens construction that lights up timing marks with unusual sharpness . . . gives a wide range of brilliance for testing spark plugs.
Vacuum gauge has 3½" dial with motor readings in color, adjustable screw and 4 ft. tubing.
Compression gauge has 2½" dial, replaceable cover, and universal cone adaptor.
Neon Timing Light made of durable ivory plastic with red-lacquered cables.
You can make a motor talk with this handy set
MORE REPAIR WORK . . . FEWER TO DO IT!
TOOLS WILL TELL IN '41!
Designed like a watch, with bushed bearings and ultra-sensitive spring movement, these gauges register smallest readings . . . yet are durably built for long service. Turn out more tune-ups this fast, accurate way . . . with a Snap-on Tune-up Set. See your Snap-on salesman, or write . . .
SNAP-ON TOOLS CORPORATION
8026-I 28th Avenue • Kenosha, Wisconsin
Snap-on SERVICE TOOLS
The Choice of Better Mechanics

AUTO-LITE SPARK PLUGS

STAND UP ON LONG HARD DRIVES!

...HERE'S 2 YEARS' PROOF

MISTLETOE EXPRESS SERVICE INC.

AGENTS IN 285 PRINCIPAL OKLAHOMA CITIES AND TOWNS

MAIN OFFICES 10 N.W. 5TH ST. OKLAHOMA CITY

July 2, 1941.

Mr. F. A. Nealon, Sales Manager
Merchandising Division
Electric Auto-Lite Company
Toledo, Ohio

Dear Mr. Nealon:

For two years we have been using Auto-Lite Spark Plugs. During this time Mistletoe Express has found Auto-Lite to be highly satisfactory in every way.

The long hard driving our trucks are subjected to is a real test of the quality and service of any product.

We felt you would appreciate knowing the satisfactory service rendered Mistletoe Express by Auto-Lite.

Very truly yours,
MISTLETOE EXPRESS SERVICE
L. S. Vance
General Manager

LSV:C

FLEET operators are facing increasing hauling demands. Spark plugs that can stand up under longer, harder trips are vitally necessary—equipment must be kept on the road.

Auto-Lite Spark Plugs are ignition engineered to give superior performance when the going is tough. To get the facts, put a set on test in your fleet. Find out why operators report Auto-Lites give surer starts, faster pick-up, restored gas economy.

THE ELECTRIC AUTO-LITE COMPANY
TOLEDO, OHIO · *Merchandising Division* · SARNIA, ONT.

AUTO-LITE SAFETY AWARDS

The Electric Auto-Lite Company is sponsoring eight annual awards in the National Truck Safety Contest of the American Trucking Associations. Presentations will be made to winners at the Annual Convention in October at New York.

IGNITION ENGINEERED

AUTO-LITE SPARK PLUGS

(CONTINUED FROM PAGE 94)
the company's big garage (60x150 ft.) is used for this purpose, equipment consisting of water hose and fountain brush, and hand polishing.

As the maintenance shop is not equipped with frame straightening devices, major wrecks, as well as routine checking for camber, caster and toe-in are sent out. For minor collisions and mishaps engendering body and fender injuries, a set of hand tools is used to repair these injuries in the shop. A power sander and paint spray gun take care of these jobs at a decided saving in labor costs.

Three mechanics and one washer are on full time in this program of inspection and reconditioning service. About one-third of the building is used for the maintenance and shop work—the other and larger end for storage, washing and polishing. Welding equipment is on hand, but due to the large savings made through safety driving practices and careful weekly check-ups, it is used very little —"but mighty handy when it is needed," the boys report.

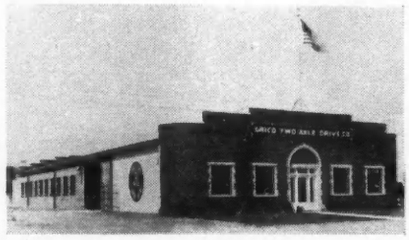
To summarize the company's reconditioning and testing equipment, which is claimed to save 50 per cent on maintenance costs over the send-out method, they have a complete outfit of garage, body and transmission jacks, trestle, engine stand, chain hoist and hydraulic lift. Air compressor, electric drills, drill press, tension wrench, lathe, oxy-acetylene welder, bench grinder, micrometer, lube guns, portable lube equipment, wheel pack lubricator for bearings, oil dispensing equipment, wheel puller and one gasoline pump, described in the foregoing.

Other special equipment consists of a power sander, paint spray gun for painting fender and body repair jobs (major painting done outside), brake lining drilling machine, lining riveting machine, voltmeter, electrical test stand, ammeter and armature tester, slow battery charger, hi-rate discharge tester, compression gauges, exhaust analyzer, hard valve seat grinder, gear puller, connecting rod aligner, cylinder hone, bearing pressure tester, cylinder grinder, valve refacer, boring bar and a portable motor analyzer.

In addition to the special gasoline recording maintenance sheets a weekly service chart record made up in the shop is used daily covering each service which is later transferred to the permanent record sheet of all operating costs, designed to departmentalize and classify all labor charges, parts used, material and supplies used, mileage run, total and average costs for each 30-day period throughout the year. To minimize the clerical work on these maintenance records, entries are made weekly.

END

(Please resume your reading on p.38)



The Grico Two Axle Drive Co. recently moved into its new modern plant at 1980 W. Eight Mile Rd., Detroit. The new plant permits doubling production.

Cat No. 2500 Re-Packable Element Type Filter.

MAKE UP for MAN SHORTAGE

MICHIANA OIL FILTERS Will Give You More Miles Before Engine Overhaul

To service, remove used Wastex and pack with new supply.

With defense industries,—and Uncle Sam's forces taking skilled mechanics daily,—fleet operators are finding that **MICHIANA** Oil Filters play an important part in keeping motors in regular operation for greater mileage.

Oil costs are reduced—but today keeping oil clean and thereby reducing maintenance work by the mechanics is of still greater value because of man shortage at a time when trucking service is in such demand.

MICHIANA Filters by the tens of thousands have proven the value of thorough filtering service. The No. 2500 is furnished with a Re-Packable filter element in which only the filtering material, Wastex, needs replacing,—while the No. 15100 has an easily replaceable cartridge. Each cuts oil costs—reduces engine maintenance—and provides ***low*** filter maintenance costs as well. Both types are selected by engineers and installed as standard equipment by truck and bus manufacturers, engine builders and on farm tractors, construction and road equipment. They are used by the tens of thousands by fleet owners.

Equip a few of your vehicles now and let the "cost-reducing" results determine your further installations . . . Bulletin on request.

MICHIANA PRODUCTS CORPORATION
Michigan City, Indiana

MICHIANA
Duo-Flo OIL FILTERS

Cat. No. 15100 Replaceable Cartridge Type Filter.

NEW PRODUCTS

(CONTINUED FROM PAGE 44)

The battery leads are heavily insulated, with clamps of solid bronze, with rubber insulated handles. A time switch automatically shuts off the machine after a predetermined charging period. The protector switch avoids over-loading or abuse to the machine.

A control switch provides for charging 2, 4, or 6-volt batteries, while an adjustment switch accurately assures the accommodation of all types of batteries on high or low-live voltages. The machine is equipped with 200 amp. discharge unit for discharge tests and break-down.
discharge tests and break-down. Three instruments test the battery cells on charge or discharge; the fourth regulates the current output of the machine and tests the over-all condition of the battery on charge.

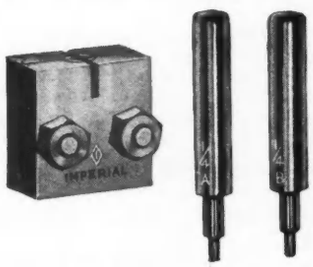
The machine is finished in white lacquer with red trimming. It is easily portable on 8½ in. rubber-tired disk wheels, which have roller bearings. It may be easily moved over the floor, rough ground, or up and down steps.

More complete details may be obtained from the Hunter-Hartman Corp., St. Louis, Mo.

Flaring Tool for Bundy Tubing

A new type of flaring tool, designed for making approved type double flares on Bundy steel tubing for gas lines and brake line connection work, has been announced by The Imperial Brass Mfg. Co., 1200 W. Harrison St., Chicago.

This tool absolutely prevents splitting



the ends of the tubing because it folds back the ends to make a flare with double thick walls. One operation of the tool bells out the ends of the tubing and another folds it back into the correct double flare. Flaring can be done in very close quarters.

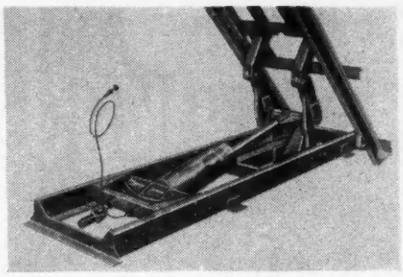
While the new tool was developed especially for flaring Bundy steel tubing, it can also be used for copper, brass or aluminum tubing. Three sizes are available for ¼ in. 5/16 in., and ⅜ in. tubing. Each size includes one die block and two punches. Price from $4.50 to $6.25.

First Aid Kit

The Gus J. Schaffner Co., Pittsburgh, Pa., has a first aid kit known as the "Little Doc." Packed in a metal container; are the recognized necessities for first aid. The medical items and the container total in value $2.65 if purchased separately but sell as a kit for $1.69.

Heavy Duty Super Hoists

The Anthony Co., announces that their complete line of hydraulic hoist dump bodies in capacities from 5 to 30 tons, will be of the double arm "Super" Hoist design. Through the use of balanced piston type of control valve the complete line will be equipped with latest push-pull dash control. The patented hoist design permits the exclusive use of rubber restraining blocks, which replace restraining chains and springs. Other features of the Super Hoist design, are telescopic tipping and subframe for lower mounting and greater load and truck stability; unit construction which makes the entire dump body unit



independent of the truck chassis. For further particulars, address the Anthony Co., Inc., Streator, Ill.

(TURN TO PAGE 100, PLEASE)

Advertise in

COMMERCIAL CAR JOURNAL

November

The Sixth Annual TRUCK SHOW in Print

—Meeting the National Emergency—

This issue will deal prominently with the effect of National Defense on civilian truck fleet operation. It will stress the helpful part that shop equipment, accessories, supplies and special truck equipment can play in maintaining and improving the efficiency of truck transportation at this time.

It will also describe new products brought out by manufacturers for the truck fleet field.

This November issue will set a new high in reader interest—and that will make the advertisements it carries of particular value to their sponsors.

Final Forms? October 20th.

COMMERCIAL CAR JOURNAL

A CHILTON Publication

Chestnut & 56th Sts. Philadelphia, Pa.

NEW PRODUCTS

(CONTINUED FROM PAGE 99)

Electro Mixture Master

An improved combustion indicator by Electro Products makes a thorough mixture check in 3 minutes. A large meter with 3-colored, easy-reading dial shows air fuel ratio also lean, average, rich and idling ranges. The precision cell gives fast response to mixture changes and is not affected by exhaust moisture. Small, compact and portable, this instrument can readily be used for road tests as well as for the shop. It is furnished complete, including batteries, 12-ft. rubber sampling hose, tail pipe connection and instructions. For further details, write to the Electro Products Co., 621 East 216th St., New York.

Electro Mixture Master

Fleets that are "ALL OUT" for Defense

use

HYPRESSURE JENNY
Steam Cleaner

Delivery of Defense Materials on unbreakable schedules, demands unfailing truck performance. To "keep 'em rolling" with maximum defense loads, at lowest cost, fleets make Hypressure Jenny Steam Cleaning the keystone of their repairing, reconditioning and cleaning program. Hypressure Jenny Steam Cleaning *before* repairs shortens lay-up time as much as 50%; quickly removes dirt that may steal as much as 400 pounds in deadweight from defense loads; and saves up to 40¢ out of every dollar of labor cost. Give us the few simple facts below, and we'll tell you how Hypressure Jenny can "keep 'em rolling" for you at lowest cost.

MAIL TODAY

HOMESTEAD VALVE MFG. CO.
P. O. BOX 90, CORAOPOLIS, PA.

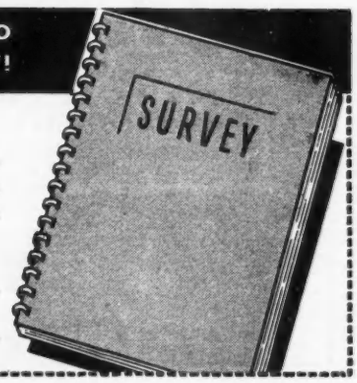
CLIPPING A COUPON LIKE THIS SAVED ONE FLEET OWNER $3400 ANNUALLY!

Go ahead—tell us how much JENNY can save us.

We employ.....mechanics on dirty greasy repair work. We repair.....trucks monthly. We repaint.....trucks monthly. We clean.....sq. ft. of garage floors monthly. We want to clean.....

NAME.....

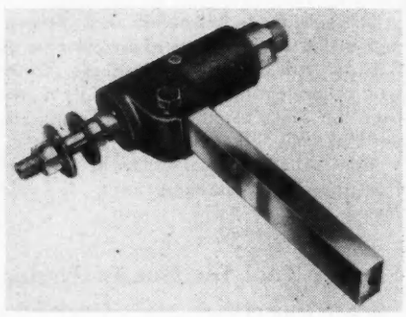
ADDRESS.....



Tool Post Attachment

A new tool post attachment for lathes, driven by a Stow portable flexible shaft machine, is being produced by Stow Mfg. Co., Inc., Binghamton, N. Y. By this means, a lathe may be adapted to many different grinding operations, both external and internal. The device accommodates grinding wheels as large as 6 in. diameter by 1 in. face. By taking off the clamp spindle and substituting the Stow Collet Chuck, a variety of mounted wheels and points may be operated for internal grinding and recess surfacing.

On the tool end the tool post attachment

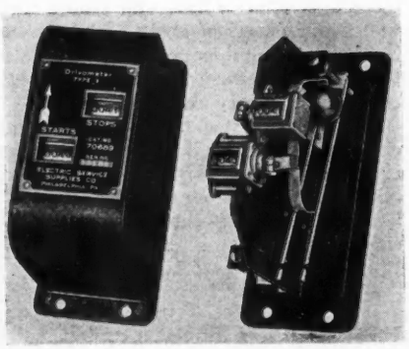


is fitted with a combination radial thrust and annular ball bearing, and on the shaft end, a floating, self-aligning ball bearing is used. This rigid spindle support insures true running of the unit at speeds as high as 6800 r.p.m.

Start and Stop Counter

The Drivometer is an instrument designed to improve the operation of a truck by assisting the driver to provide smoother starting and stopping. It may be installed at minimum cost, requires no wiring or other connections and practically no maintenance.

This instrument records each quick start or stop. Its simplicity of design is based



on the principle of a ball rolling up an inclined track. If a vehicle starts or stops too quickly the ball rolls far enough up the incline to move a counter.

Manufactured by Electric Service Supplies Co., 17th & Cambria Sts., Phila., Pa.

(TURN TO PAGE 102, PLEASE)

Insulation in PERFECT CONDITION after Nine Years of Service

9-Year old "reefer" of Arrowhead Freight Lines being dismantled by Drayer & Hanson, Inc., Los Angeles body builders.

DRY-ZERO re-installed in new body after over 1,000,000 miles of operation

A million miles of jolting, shocking, truck travel in all weather conditions would ruin almost any insulant. Yet after nine years of such punishment, this Dry-Zero Insulation was found light and dry—in such perfect condition that it was re-installed in another body.

Dry-Zero Insulation has been established under test as the most efficient commercial insulant known. What's more, it is by nature water repellent (non-hygroscopic) and neither absorbs moisture nor holds it by capillary attraction. Properly installed, Dry-Zero Insulation retains its efficiency for the life of one body after another.

Dry-Zero weighs approximately 1½ oz. per board foot. This light weight—one-seventh that of commercial corkboard—adds a substantial amount to your payload capacity or reduces operating costs. In addition, Dry-Zero is remarkably free from settling, rotting, disintegration, or absorption of odors. Write, Dry-Zero Corporation, 222 North Bank Drive, Chicago; or 60 E. 42nd St., New York.

Here's how the Dry-Zero Insulation looked when it was removed from the trailer body. It had remained dry and efficient, and there was no sign of deterioration or settling.

3 OUT OF EVERY 4 INSULATED TRUCKS USE

DRY·ZERO Insulation

NEW PRODUCTS

(CONTINUED FROM PAGE 100)

Whiz Metal Weld

Whiz Metal Weld is a new formula especially compounded to seal permanently cracks in aluminum alloys, cast iron and steel. It quickly repairs cracked and porous cylinder heads, cracked valve ports, cracked water jackets and engine blocks.

Introduced as a heavy liquid into the cooling system, it seeks out and filters into all cracks, leaks, or pores and congeals into a hard, metal-like substance upon coming in contact with the open air. It absorbs high engine temperatures, causing a strengthening reaction by heating the metal seal until it attains flint-like hardness and fuses with the adjoining metal.

Repairs made with Metal Weld will never reopen, expand and contract freely with heat and cold. It circulates easily throughout the cooling system and will not impede circulation. $2.00 a pint. Made by the Hollingshead Corp., Camden, N. J.

K-D Reflector

The K-D Lamp Co., Cincinnati, announces a new plastic reflector.

The lens of this new reflector is made of Lucite, which has been found to be more shatter-proof than glass and more impervious to weather conditions. According to tests this 3-in. plastic reflector "borrows" light from a distance of 1300 ft. It has

beam-throwing power eight times the power of glass and exceeds S.A.E., I.E.S. and I.C.C. requirements on all points.

Ordinary shocks and bumps bounce harmlessly off its resilient face. The lens is set in a heavy, deep-drawn housing which forms a protective roll around the entire circumference. Severe blows might crack it, but cannot shatter it. Moisture, salt spray and dust do not mar its efficiency.

Reflectors come in uniform red or amber, non-fading colors, and a variety of mountings.

Trouble Lamp Set

This new Trouble Lamp Set No. DL-12, made by Cole Hersee, Boston, Mass., consists of one trouble lamp with 12 feet Siamese rubber-covered wire. One clamp on socket with wire lead for attaching to ammeter.

All metal parts are absolutely rustproof and the bulb is protected by a locked cover,

which buttons tight, and when opened up acts as a reflector for diffusing the maximum amount of light. Movable stand which is part of the lamp can also be used as a hook. The socket has the new S type of clamp and such a socket in itself is a valuable asset in these days where there is only indirect dash illumination.

Wire Rope Clamp

The National Production Co., Safe-Line Clamp Division, Detroit Mich., have a simple wire rope clamp called the Safe-Line clamp which eliminates the necessity for splicing and serving wire rope when making slings, etc. Two taper threaded sections are placed around the wire rope and then two taper nuts are screwed in place, clamping the wire with a strength stronger than the wire itself. It can be installed by an unskilled man in a very few minutes.

(TURN TO PAGE 104, PLEASE)

3 REASONS
Why you should call your Pyrene Tire Chain Jobber NOW

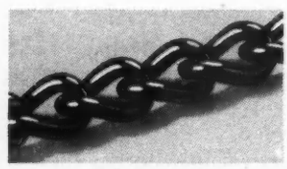
1 **Chain deliveries may become uncertain.** Priorities on steel and tools could easily cause a bad chain shortage if this winter is severe. Yet this winter, more than ever, you must be prepared to deliver in spite of anything. High-quality chains are your one solution. *Pyrene jobbers now have stocks.*

2 **New Safety Service Forecast.** Pyrene jobbers, and Pyrene jobbers only, can furnish you with the famous forecasts which predict chain weather as much as a month ahead. With them you can be sure of chains in trucks when needed, can have overhauls made ahead of time, can prevent lost time and damage. These Pyrene forecasts warned of last winter's worst storms. This year they're even more detailed.

3 **Top-Quality Chains and Parts.** All Pyrene chains, singles or duals, regular, extra-heavy, or Bar-Reinforced, are unbeatable in quality—in miles of safety and service for your dollar. Every link is casehardened. Every lock is Easy-On Easy-Off. And for double the mileage at slight increase in cost, specify Pyrene Doubleduty Bar-Reinforced.

To insure delivery, order now. Call your Pyrene jobber or write us.

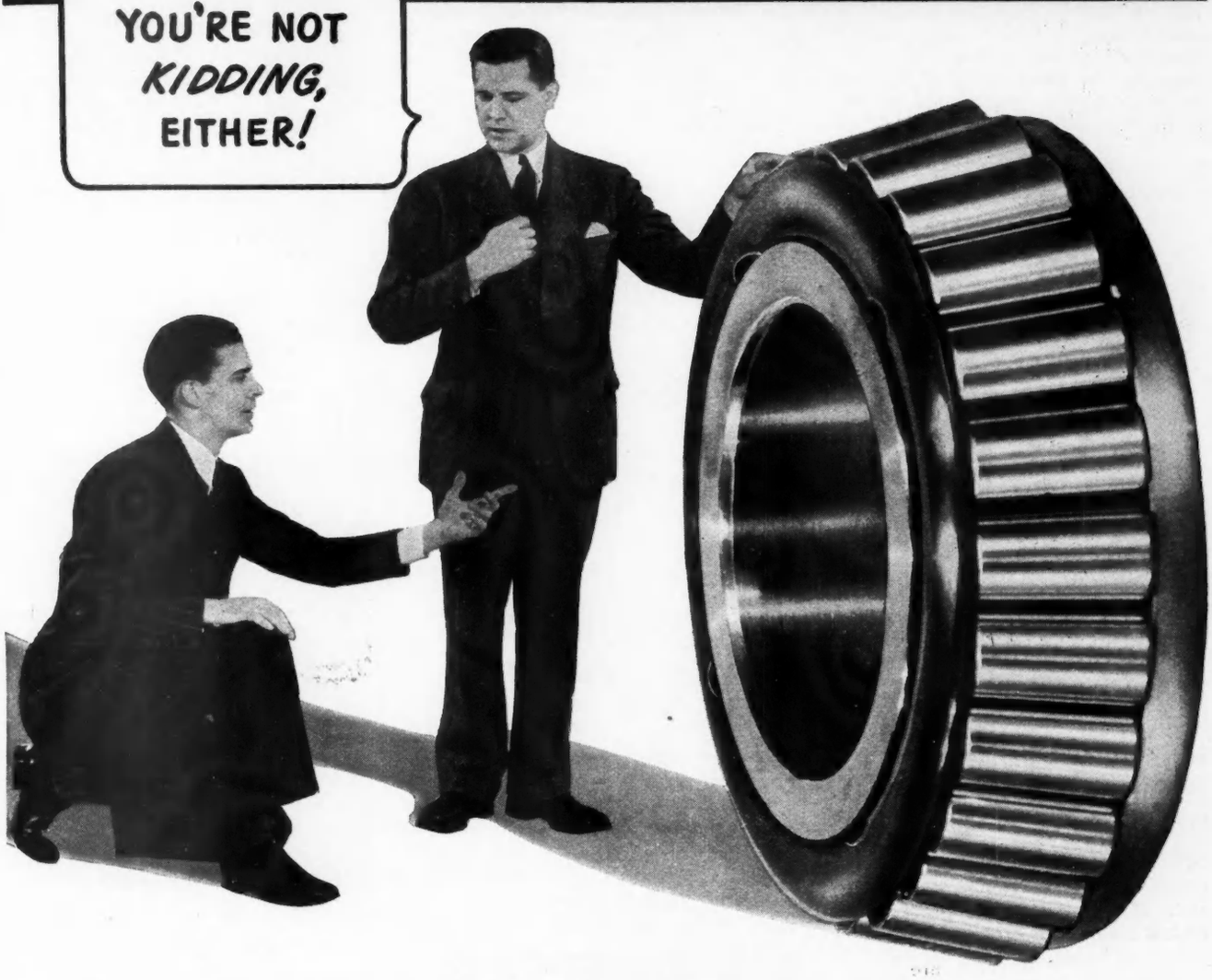
"Doubleduty" Bar-Reinforced



Regular or Extra Heavy

Pyrene Manufacturing Company
NEWARK NEW JERSEY
ATLANTA KANSAS CITY CHICAGO SAN FRANCISCO

"A Better Bearing for Bigger Jobs!"



● "No job too tough for Tyson Cageless" is no mere slogan. Whether called upon to serve in power shovels, oil field equipment, Army and Navy guns — or to move heavy trucks, buses and tractors — Tyson Cageless can take a lot of punishment and come up smiling . . . Usually outlasts conventional cage-type bearings two to one, in interchangeable sizes and under the same operating conditions.

. . . Tie up with Tyson now!

Cageless FOR HARD SERVICE *Cage-type* FOR REGULAR SERVICE

Tyson

TYSON ROLLER BEARING CORPORATION, MASSILLON, OHIO

NEW PRODUCTS

(CONTINUED FROM PAGE 102)

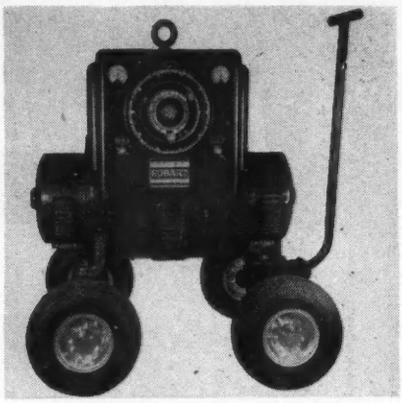
Mitts Hand Cream

Mitts is a water-soluble hand cream that is applied to the skin before starting work. It dries quickly and acts as an invisible glove guarding the hands from grease, paint, ink and other matter difficult to clean. It also protects the hands from many irritating materials which cause industrial skin trouble. It washes off easily with soap and water taking all the dirt with it. It is made by Mitts, 367 E. 45th St., Brooklyn, N. Y.

Portable Arc Welder

A new four-wheeled, light-weight, pneumatic-tired trailer for mounting all Hobart electric drive welders is announced by Hobart Brothers Co., Troy, Ohio. Easy portability enables the welder to make hurry-up trips to different parts of the plant.

Mounting is easily accomplished by means of four bolts in the frame of the trailer which register with four holes in the legs of the welding machine. Unit is easily moved by hand by virtue of the low, underslung construction, narrow 27-in. tread and method of balancing. Trailer is of arc-welded steel construction.



This unit weighs 120 lb.; measures 12⅞ in. high; 45 in. overall height; 44 in. overall width; 33 in. from hub to hub to hub; 25 per cent tilting angle; 14-in. tires.

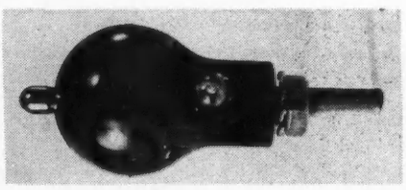
Air Wrenches

Ingersoll-Rand Co., Phillipsburg, N. J., have two new air-operated impact wrenches. Both are designed with the Pott Impact Wrench principle which localizes the steel to steel impact without transmitting shock

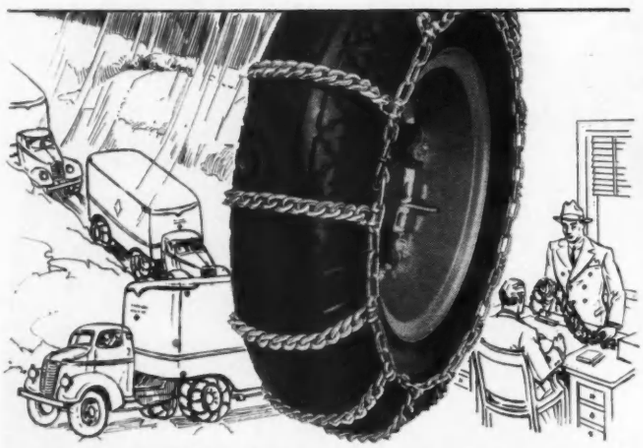
to other parts. One wrench will handle to ⅜ in. sizes and the other to 1¼ in. The smaller of the two has a pistol grip and is 9⅛ in. long.

Direction Signal Switch

The Teleoptic Company, Racine, Wis., announces the addition of a directional signal switch, for mounting on instrument panels, to their signal equipment line. Known as A121, the switch is easily in-



stalled by drilling only one hole, through which both mounting stud and wires run. The switch, like all Teleoptic signal equipment, is guaranteed for one year. It is furnished with or without pilot light.



CLAW GRIP

CHAIN DOLLARS and TRUCKS go farther with CLAW TRUCK CHAINS

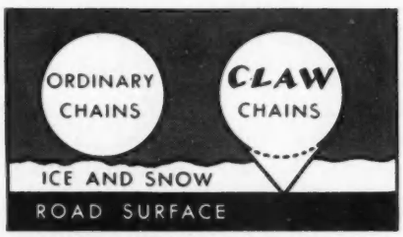
20% more steel in every cross link for greater mileage.

Exclusive CLAW grip bites into ice and snow for positive traction and safety.

Indented Rim Chains eliminate play and minimize breakage.

Chain dollars and trucks go farther with **CLAW** Truck Chains because **CLAW** chains are super-built to withstand the "gaff" of the severest truck service. Look at these exclusive features that have earned **CLAW** chains the reputation of "Tough Guy" in some of the hardest assignments on the road. Patented **CLAW** grip that bites in at the point of traction effectively out-grips any chain on the market...gets trucks through regardless of road conditions.

- **CLAW**-Alloy steel, toughest chain metal known, multiplies chain mileage.
- Special Indented rim chains prevent play and excessive breakage between cross and rim chains.
- Improved Blue Boy fastener snaps on quickly, easily... can't work loose. Specify **CLAWS** all around. They'll cut your chain costs down and bring trucks through on schedule because they're made for a steady diet of abuse. Single and dual, all sizes. Write for catalog.



20% MORE CLAW-ALLOY STEEL IN THESE KNIFE EDGES... Unlike the ordinary round link that rides on top, the protruding **CLAW** "V" bites into ice and snow for a positive grip that can't slip. There is actually 20% more **CLAW**ing Alloy steel in every **CLAW** cross link and it is concentrated where it does the most good...at the point of traction.

COLUMBUS-McKINNON Chain CORPORATION

General Offices: TONAWANDA, N. Y.

PLANTS AT ST. CATHARINES, ONT., CAN. AND VEREENIGING, SO. AFRICA

GOING NUTS

Over High Braking Costs?

TRY THE J-M TREATMENT

Why take a long-term lease on a "padded cell" when you can try the J-M treatment? It's as simple as it is effective! Just change over to dependable, long-wearing Johns-Manville Brake Linings—the linings with the *low-cost maintenance factor!*

Take a look at the record. In the bus field, operators using J-M Brake Linings have shared in "Bus Transportation's" highest awards for efficiency and economy in maintenance for 11 consecutive years. What's more, J-M Brake Blocks have been selected as factory equipment on more busses than any other brake blocks!

• **So turn your back on the "padded cell"** and bring your brake problems to J-M. Let Johns-Manville Engineers prescribe, through the Brake Advisory Service, the right brake materials for your operating conditions, help you get the most efficient, economical braking you've ever had. Mail the coupon today!

JOHNS-MANVILLE
BRAKE LINING

JOHNS-MANVILLE, Dept. CJ-9
22 East 40th Street, New York, N. Y.

Yes, I'm in need of J-M's "treatment" for high braking costs. Tell me, through your free Brake Advisory Service, how I can reduce my costs and get better braking with J-M Brake Linings.

*Name*_____

*Address*_____

*City*_____ *State*_____

WILLYS' 1942 PANEL DELIVERY

THE new 1942 Willys semi-cab-over-engine, half-ton panel delivery truck, offering a maximum in pay load capacity per pound of truck weight, is designed to deliver up to 30 m.p.g. of gas.

The panel delivery truck has a load compartment 96 in. long by 63 in. wide and 63 in. high. New 10 1/3 in. brakes offer 11.1 per cent increase in braking surface. Radiator efficiency has been improved by shrouding around the radiator and better operation is assured by the use of special hypoid axle and a new heavy duty clutch.

The truck has a trim body primarily designed for dairies, bakers, confectioners, and others demanding large carrying capacity at low cost.

The body is of all-steel tubular, unit-weld construction, with Plymetl panels and double-faced doors and Phemaloid one-piece hardwood floor, forming a smooth, dust-proof interior. Fabric-covered plywood roof inserts repel heat, and, in conjunction with the panel and floor materials, provide insulation against both heat and cold. The rear doors are sealed with sponge rubber and hung with full-length piano-type hinges. The compartment for spare tire and tools is easily accessible under the body at rear.

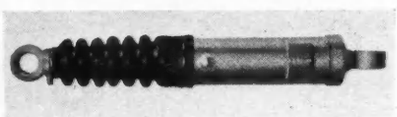
The cab, is of all-steel one-piece construction with trim affording insulation against heat, cold and rumble. From the single, adjustable driver's seat there is full-vision both front and sides, and the truck is equipped with safety glass throughout.

It will be powered by the Willys engine which, this year, features a highly satisfactory iron alloy piston designed to increase piston life without sacrificing performance. A redesigned heat control mechanism provides proper temperature control of the fuel mixture at every speed and under all temperature conditions.

Join the Parade to
WEATHERHEAD
THREE SOUND REASONS MAKE WEATHERHEAD
YOUR CHOICE OF REPLACEMENT FITTINGS:
1. They are original equipment parts.
2. They cost YOU no more than substitute makes.
3. They stand up under the toughest service.
YOUR jobber carries both—Weatherhead original equipment replacement fittings and Weatherhead fuel lines in coils or ready-to-install lines with fittings attached. When replacements are necessary—just specify Weatherhead.
THE WEATHERHEAD CO.
300 East 131st St., Cleveland, Ohio
WEATHERHEAD
FITTINGS · FUEL LINES · BRAKE PARTS · DASH CONTROLS

Spring Control

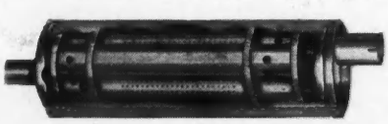
The Cleveland Pneumatic Tool Co., Cleveland, Ohio, announce their new Cle-Air Hyrau-Matic Spring Control. This unit, designed for use on both trucks and buses, and built for long life and hard service, is of the double acting, hydraulic-pneumatic type, operating on the "free center" prin-



ciple. It allows unrestricted steel spring action when the roadway is reasonably smooth, but when the wheels meet an obstruction, the shock absorbing and snubbing action of the Cle-Air unit comes into play, holding the vehicle on an even keel, eliminating roll and sway.

Aluminumized Mufflers

The Arnold Haviland Co., Defiance, Ohio, has introduced a new line of improved mufflers featuring shells of Armco Aluminumized steel. Protective layers of molten aluminum have been superimposed



on heavy-gauge sheet steel to assure longer muffler life and resistance to acids, rust and corrosion. Interior construction is said to be scientifically designed to assure low back pressure and quiet performance.

JOIN THE OPERATORS

WHO ARE SAVING

WITH Packard CABLE

REG. U. S. PAT. OFF.
TRADE MARK

The records of many fleet operators have proved conclusively that Packard cable has more MPR*—that it eliminates as many as one out of every three replacements. The results have been appreciable savings in labor and lay-up time, fewer breakdowns caused by cable failure, and, in many cases, better engine efficiency and increased gas mileage.

Standardizing on Packard cables will cut the cost of your operations. They are built for the job—made to give greater resistance to heat, oil, moisture and abrasion. This durability and efficiency are the result of Packard's leadership in volume production and extensive research in Packard's own laboratories.

There are specific types and sizes of Packard cable for all fleet requirements. Ask your jobber about them today. Packard Electric Division, General Motors Corporation, Warren, Ohio.

THERE'S *MORE*

MPR*

(*Miles Per Replacement)

IN PACKARD CABLE

Packard

REG. U. S. PAT. OFF.
TRADE MARK

THE STANDARD WIRING EQUIPMENT OF THE AUTOMOTIVE INDUSTRY

Above: Mack EG models in speed effect tests on Pennsylvania Turnpike. Windscreens provide uniform resistance at 50 m.p.h. on any grade.

MACK STUDIES SPEED EFFECTS

TODAY'S demand for faster and more powerful trucks is creating new engineering problems. Mack Truck engineers have for some time concentrated on intensive research and testing to determine the effects of higher sustained speeds on modern truck engines.

As part of this program two Mack trucks have recently undergone a mechanical "third degree" on the Pennsylvania Turnpike, the 165-mile super-highway between Pittsburgh and Harrisburg.

On this 70-mile-an-hour speedway the two Macks have been in constant high-speed operation for four months, running three 8-hr. shifts a day, five days a week.

Each truck is equipped with a host of delicate instruments to fully indicate and record the effects of the strenuous testing, all data being logged by crews of engineering observers. The instruments register the temperature of the water as it enters and leaves the block; oil temperature in the crankcase, transmission and rear axle; and air temperature at the air-cleaner intake. There is a vacuum gage connected with the intake manifold and also a tachograph which gives a continuous recording of time, distance and speed.

In addition, an electric potentiometer provides for temperature observations of the spark plugs, intake- and exhaust-valve ports and main bearings.

By thus condensing a normal year's operation into four months, under all types of weather conditions, it has been found possible to predict closely just what effects are produced by sustained high-speed operation under constant load, and to prescribe remedies and improvements wherever needed. It is reported that the study has already made possible several improvements in Mack design and construction.

BE PREPARED
for Winter Hazards!

Weather Forecast
SNOW—
SLEET—
FROST—
All Winter Long

"3.342 Defrosting Device
Every motor vehicle which is equipped with a windshield, when operating under conditions such that ice or frost would be likely to collect on windshield, shall be equipped with a device or other means for preventing or removing such ice or frost."
See page 47, ICC Motor Carriers' Safety Regulations, Revised.

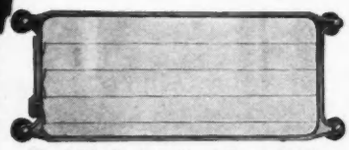
TODAY, more than ever, it is important that the hazards of winter truck operation be reduced. Equip your fleet with either (or both) of these safety accessories:

FULTON ELECTRIC SLEET-FROST SHIELD

Keeps its space on inside of windshield clear of frost and steam without use of electric current. Melts snow and ice on *outside* of windshield by switching on current. Highest quality construction. Metal frame is equipped with rubber seal.

No. 1-F3, illustrated, with 4 heating wires, complete with cord.

List Prices - - 6-volt, $3.65 — 12-volt, $4.00



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No. 496 DEFROSTING FAN

Unexcelled for keeping inside of windshield and cab windows free of both frost and steam. Also valuable for cooling and ventilating in hot weather.

Universal type curved bracket permits mounting in choice of four directions at any point where attached . . . on steering post, instrument cowl, headerboard, WINDSHIELD CENTER POST or WINDSHIELD FRAME. Two-blade 6" fan (non-overlapping soft rubber blades) moves large air volume and permits greatest visibility of road and instrument panel. Streamlined, two-tone "Tiffany" finish motor case with fittings to match. Specially wound 2-speed motor.

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Order from your jobber or write us direct if he cannot supply you.

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Licensed under U.S. Pat. No. 2,095,223 Canadian Pat. No. 370,548

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Attached to Windshield

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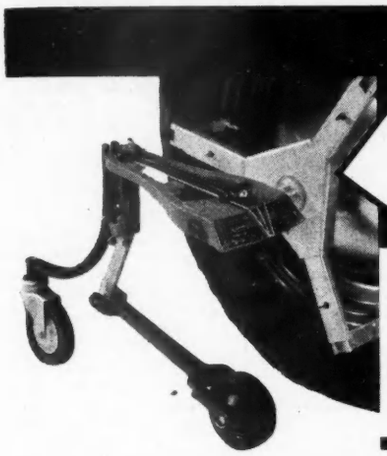
Literature describing EVERHOT Tire Branding Equipment and sample record forms are yours if you write. Start now to keep the life story of your tires.

Everhot MFG. CO., Maywood, Ill.



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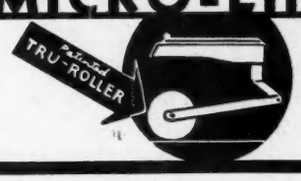

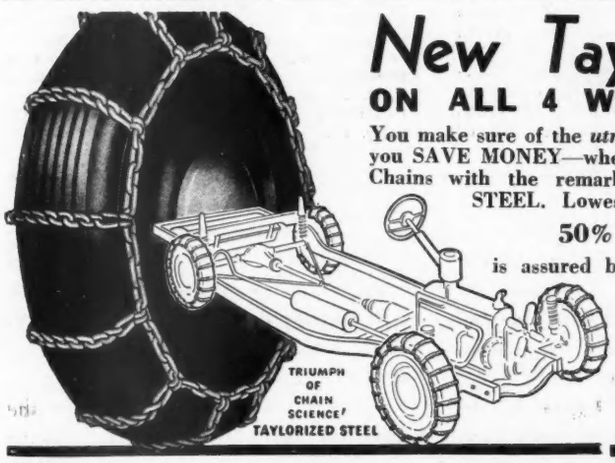

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AFTER HOURS

(CONTINUED FROM PAGE 31)

which some States may be disposed to eliminate, but which need to be taken care of more quickly than is possible by legislative action.

The Commission informed Congress that opposition to its recommendation "comes, first and foremost, from the railroads." It remains to be seen how Congress will deal with an opposition that is inspired by so ignoble a sentiment as ruthless selfishness.

Commissioner Splawn's Dissent

IN his lone dissent from the recommendation of his I.C.C. colleagues, Commissioner Splawn argued that States can be trusted to do the right thing in the regulation of motor trucks. "Recently in several instances State laws have been modified upon a showing to the legislatures that conditions have changed," he reasoned.

It is certainly true that a considerable number of States relieved restrictions on trucks in varying degrees during the past legislative year. But Commissioner Splawn's reasoning gives the impression that the conditions which were responsible for the original restrictions had changed and paved the way for relief that could not logically be denied. Such an impression, of course, is the responsibility of the reader but by the brevity of his dissent and the failure to elaborate and clarify the principle term in his dissenting premise, the Commissioner must share the responsibility for the impression if it differs from his intent.

What, for instance, were the conditions that changed in Texas and prompted the legislature early this year to kill its fantastic 7000-lb. payload law and substitute a more liberal measure? The only "condition" that changed was that the Texas railroads lost their hold on the legislature, but only after highway interests had taken their cause to the public, exposed the rank discrimination of the law and placed the blame where it belonged.

More Efficient Use of Trucks Urged at Council Meeting

At a meeting of the board of directors of the National Council of Private Motor Truck Owners, Inc., held in Washington, steps were taken to further increase the Council's participation in the National Defense program, particularly with respect to highway transportation activities.

Frederick C. Horner, council director and consultant to Ralph Budd, Transportation Division, Office for Emergency Management, announced the Central Motor Transportation Committee had taken steps to promote immediately the utilization by truck operators of all possible means to increase the operating efficiency of existing motor vehicles. Mr. Horner emphasized particularly the desirability of Council cooperation in obtaining from its members suggestions as to how the more efficient use of motor trucks may be effected—for the guidance of the Central Motor Transportation Committee in furthering this project.

President Brenckman announced the appointment of the Council's National Defense Committee to consist of William H. Ott, Jr., Kraft Cheese Co.; T. L. Preble, Tide Water Associated Oil Co.; J. W. Sinclair, Union Oil Co. of California; A. M. Grean, Jr., Ward Baking Co., New York. The Council's activities in promoting the more efficient use of existing truck equipment will be further enhanced through the work of the Council's Technical Advisory Committee, headed by Leo Huff, Pure Oil Co., Chicago, Ill.

Those present at the meeting are pictured above, left to right:

L. F. Orr, general traffic manager, Pet Milk Co., St. Louis, Mo.; O. M. Kile, Mail Order Assn. of America, Washington, D. C.; G. W. Laurie, manager, automotive transportation, Atlantic Refining Co., Philadelphia, Pa.; Arthur C. Butler, Automobile Manufacturers Assn., Washington D. C.; Frances Hottinger, headquarters staff assistant; Leon F. Banigan, managing director of the Council; Fred Brenckman (Council President), Washington representative, The National Grange, Washington, D. C.; W. H. Ott, Jr., general traffic manager, Kraft Cheese Co., Chicago, Ill.; J. B. Pymer, secretary-treasurer, City Baking Co., Baltimore, Md.; R. J. O'Hare, traffic manager, Sheffield Farms Co., Inc., New York, N. Y.; R. C. Hibben, International Association of Ice Cream Manufacturers, Washington, D. C.; E. M. Fetherston, Jr., traffic and warehouse manager, Pender Division, Colonial Stores, Inc., Norfolk, Va.; D. C. Fenner, vice president, Mack Mfg. Corp., Long Island City, N. Y.; Leo Huff, manager of motor transport dept., The Pure Oil Co., Chicago, Ill.

Texas roads had not changed.

Traffic conditions had changed but this should have been a reason for tightening up on the restrictions because the 7000-lb. law had been passed originally with a "safety" label attached to it. What happened, of course, was that in little more time than it takes to say Walter Marshall William Splawn two trucks sprouted where only one had been before and traffic conditions were more congested than before, if they ever were congested. That proved conclusively that the railroads had merely used the cause of safety to gain their own selfish ends. It was the old "widows and orphans" appeal, streamlined. This change was noticeable two years after the law went into effect, but until this year the railroads were successful in resisting all attempts at modifying the restrictions.

In short, there had been no favorable change in conditions that persuaded the Texas legislature to hearken to the plea of the railroads and restrict the operation of trucks.

This is true of many States that modified their regulations this year. In those States this year, as in the past, the fight to relieve restrictions was fought along purely political lines and the only changed condition was a weakened opposition that maintained the same arguments against relief that brought them success originally.

By casting his vote for the political process of change with its danger that inequities may not be remedied, the Commissioner simply favors the slow, uncertain process which his colleagues prefer to see superseded by one which would take realities into consideration and effect a speedier solution based on facts, not fancies, on justice, not intrigue.

EIGHTEEN STATES EASE RESTRICTIONS

(CONTINUED FROM PAGE 20)

bus weights, he approved another bill amending the bus registration law to permit the registration of buses from 24,000 to 30,000 lb. when equipped with balloon tires and hydraulic shock absorbers for a fee of $195, thus accomplishing the same result.

Digests of the most important 1941 size and weight enactments follow:

ARIZONA—Amends Section 66-127, Code of 1939, to increase the maximum length of single units to 35 (formerly 33) ft. and to decrease the length of combinations from 85 ft. to 65 ft.

Effective June 15, 1941.

CALIFORNIA—Amends Section 704 of the Vehicle Code to increase the maximum axle load to 18,000 (formerly 17,000) lbs. and to reduce the maximum wheel load to 9500 (formerly 10,000) lbs. Section 705 is reenacted to provide a gross weight formula of 800 (L plus 40) unless the distance between first and last axles is 18 ft. or less, in which case a formula of 700 (L plus 40) shall apply.

Provides an exception until January 1, 1952, permitting vehicles registered prior to January 1, 1942, a maximum weight of 850 (L plus 40) but not to exceed 68,000 lbs. where there is a distance not less than 25 ft. nor more than 45 ft. between first and last axle. Provides a similar exception of 800 (L plus 40) for vehicles where the distance between the first and last axle is between 14 and 18 ft.

Repeals Section 702 providing fixed gross weight for 2-axle vehicles and Section 703 providing gross weight for 3-axle vehicles.

Effective Jan. 1, 1942.

DELAWARE — Amends Section 117(e), of Chapter 165 of the Revised Code, to delete the former carrying-capacity limit of 10,000 lbs. (which was not enforced).

Effective March 19, 1941.

Amends Section 115(b) of the Revised Code to increase the maximum height of vehicles from 12 ft. 2 in. to 12 ft. 6 in.

Effective March 19, 1941.

FLORIDA—Prescribes additional weight limits for privately operated vehicles. Imposes a 16,000-pound axle weight. Increases to 24,000 lbs. (formerly 18,000 lbs.) gross weight of vehicles equipped with power brakes and having at least six pneumatic tires. Tractor semi-trailer combinations equipped with power brakes shall not exceed 40,000 lbs. gross weight. (Passed over Governor's veto.)

Effective April 18, 1941.

Amends Sections 11 and 22 of Chapter 14764, Acts of 1931, as amended, to extend the size and weight limits applicable to common carriers subject to Railroad Commission to contract carriers, permits for whom are issued by the Railroad Commission. Increases to 40,000 lbs. (formerly 34,000 lbs.) the maximum gross weight of a tractor semi-trailer combination when both vehicles are equipped with booster, vacuum or power brakes.

Effective June 14, 1941.

GEORGIA—Adopts the uniform standards recommended by the American Association of State Highway Officials, which are as follows: Width—96 in.; height—13 ft. 6 in.; single unit length—35 ft.; length of combinations—45 ft.; maximum gross weight as limited by the formula 700 (L plus 40) subject to wheel and axle loads (for axles equipped with high pressure pneumatic or solid rubber

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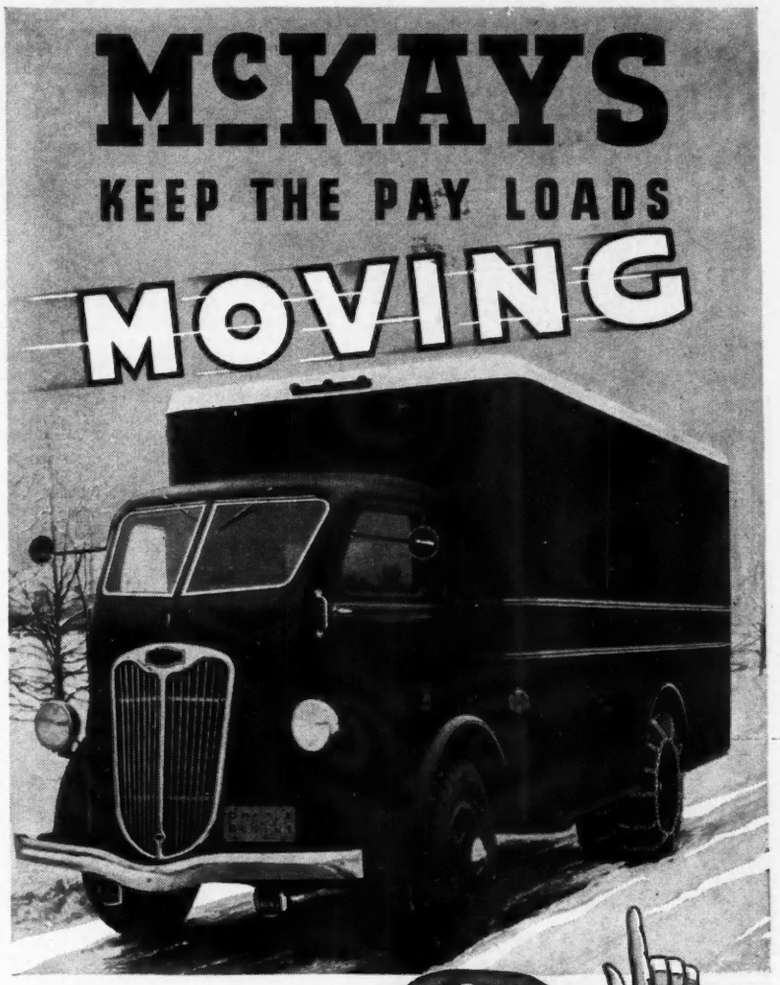

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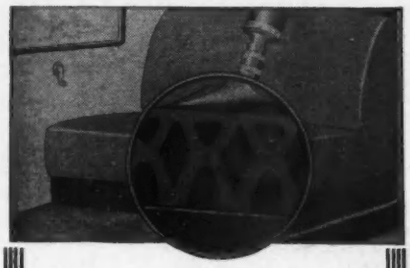

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(CONTINUED FROM PAGE 139)

tires—16,000 lbs. and for low pressure pneumatic tires—18,000 lbs.). Provides for special over-weight and over-size permits.

Repeals Sections 68-401 (maximum sizes), 68-402 (gross weights) and 68-702 (maximum sizes and weights) of the Code of 1933. Provides that no railroad company shall be obligated to alter its tracks or other structures by reason of the limits set in the act or to accommodate any vehicle exceeding 12 ft. 6 in. in height.

Effective March 27, 1941.

INDIANA—Amends Section 2 of an Act approved March 7, 1931, and approved March 12, 1937, to increase the maximum length of single units to 36 (formerly 33) ft. and to substitute a gross weight formula of 700 (L plus 40) in lieu of the former gross weight of 40,000 lbs. Increases the maximum wheel load to 9,000 (formerly 8,000) and maximum axle load to 18,000 (formerly 16,000) lbs. Provides that the total weight of any tandem axle group shall not exceed 24,000 lbs. plus 700 lbs. for each lineal foot between the first and last axles. Defines "tandem axle group" as any two or more axles spaced more than 40 inches from center to center having at least one common point of weight suspension.

Effective July 8, 1941.

IOWA—Amends Section 5035.12 of the Code of 1939 to grant Iowa trucks a maximum axle load of 17,000 lbs. for pneumatic tired vehicles and 14,000 lbs. for solid tired vehicles; provided, that total maximum weight shall not exceed 14 tons plus 500 lbs. for each foot between the first and last axles. Provides that an axle may be divided into two or more parts but that all parts in the same vertical transverse plane shall be considered as one axle.

Effective July 4, 1941.

MARYLAND—Amends Section 196 of Article 56 of the Annotated Code to substitute a gross weight formula of 750 (L plus 40) in lieu of the present fixed maximum weights for various vehicles and combinations. The maximum allowable under the formula is also subject to a 600-pound (formerly 700) per inch of tire width limit and a maximum axle load of 22,400 lbs. (except that for coupled axles—limited to two to a vehicle—spaced less than 50 in. apart and for combinations other than tractor semi-trailers, the maximum axle load would be 18,000 lbs.).

Prescribes a maximum length of 55 ft. (at present there is no such limit). Restores the former limits for solid tired vehicles of 25,000 lbs. for 2-axle vehicles and 40,000 lbs. for 3-axle vehicles (both now permitted 42,000 lbs.). Forbids registration of solid tire vehicles in excess of rated carrying capacity for 5 tons if equipped with four wheels and 10 tons if having six wheels.

Extends the power of the State Roads Commission in limiting weights of bridges. Increases the minimum fine for violation of weight provisions to $10 (formerly $5).

Effective June 1, 1941.

MASSACHUSETTS—Amends Section 19 of Chapter 90 of the General Laws to increase the maximum length of single unit vehicles to 33 ft. (formerly 28 ft.) and of motor buses to 35 ft.

Effective August 21, 1941.

NEW HAMPSHIRE—Amends Section 22 of Chapter 103, Public Laws, as amended, to increase the maximum gross weight of two-axle motor vehicles to 30,000 lbs. (formerly 28,000 lbs.).

Effective June 12, 1941.

NORTH DAKOTA—Amends Section 1 of Chapter 285, Session Laws of 1935, to increase the maximum axle load to 18,000 lbs. (formerly 16,000 lbs.); provided the axle load for axles spaced less than 8 ft. apart shall be 14,000 lbs. The weight per inch of tire width is reduced to 550 (formerly 600) lbs. Increases the gross

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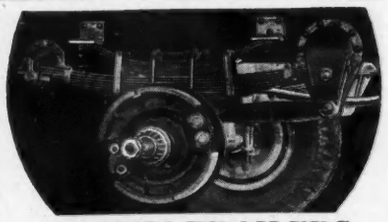

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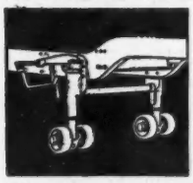
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(CONTINUED FROM PAGE 140)

weight of any combination of vehicles to 40,000 lbs. (formerly 35,000 lbs.). Requires applicants for registration to state size of tires used on each vehicle registered.

Decreases the maximum length of single units to 35 ft. Provides that not more than two units shall be used in a combination. Eliminates former restrictions on use of full trailers. Exempts from length provision vehicles of the defense forces of the U. S. or the National Guard of North Dakota.

Effective July 1, 1941.

OHIO—Amends Sections 7246, 7248-1 and 7248-2 of the General Code relating to maximum sizes and weights. Prescribes the following additional axle weights:

SOLID TIRES

Number of Axles	Original Maximum	Additional weight allowed for each foot between such axles
2 successive	16,000 lbs.	1,300 lbs.
3 or more successive.	24,000 lbs.	600 lbs.

PNEUMATIC TIRES

3 or more successive.	30,000 lbs.	750 lbs.
2 successive	18,000 lbs.	1,500 lbs.

Permits vehicles in use on January 1, 1942, to be operated for a period of not more than six years under present axle and vehicle weight limits. Prescribes a maximum wheel load of 650 lbs. per inch width of tire. Requires solid tires to be not less than 1 inch thick when measured from the top of the flanges of the tire channel.

Passenger bus motor vehicles operated exclusively within municipalities are permitted a width of 104 in. and a length of 48 ft. The length of commercial tractor semi-trailer combinations is increased to 45 (now 40) ft. Exempts from the size limits the transportation of pipes or well-drilling equipment and limits the exemption of transportation of poles to cases where required for public utility or service facilities or properties.

Enacts Section 7250-1 providing penalties for violations. Repeals Sections 7248-3 (prescribing vehicle and combination length and weights), 7249 (operation of commercial cars with respect to speed and weight) and 13,421-17 (prescribing penalties for violation).

Effective Aug. 13, 1941.

OREGON — Amends Section 115 - 387, O. C. L. A., to increase the maximum axle load to 18,000 (formerly 17,000) lbs.

Effective June 13, 1941.

SOUTH DAKOTA—Empowers the Highway Commission to permit the use of motor vehicles of greater length and weight than is authorized by law in picking up and delivering commodities only at communities where railroad service has been abandoned and at such railway points as may be designated by the commission. Declares such operators common carriers and permits the commission to limit the speed of such motor vehicles and designate the highway over which the same may move.

Effective March 7, 1941.

TENNESSEE—Amends Chapter 105 of the Public Acts of 1939 to increase the gross weight limit to 30,000 (now 24,000) lbs., subject to 16,000 axle load (no allowance for overweight).

Effective February 15, 1941.

TEXAS—Increases the truck weight limit by establishing a new gross weight formula of 700 (L plus 40), subject to an overall maximum gross weight of 38,000 lbs. (formerly limited to 7,000 lbs. payload unless transporting to or from a receiving or loading point of a common carrier or from point of origin to destina-

(TURN TO PAGE 142, PLEASE)

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WIRE AND CABLE

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The Crescent Company

Pawtucket, Rhode Island

(CONTINUED FROM PAGE 141)

tion less distant than the nearest receiving or loading point of a common carrier, in which event, 14,000 lbs. capacity was permitted). Increases to 650 lbs. the weight per inch of tire width for low pressure pneumatic tires. Sets a maximum axle load of 16,000 lbs. for high pressure tires and 18,000 lbs. for low pressure tires.

Effective March 24, 1941.

VERMONT—Amends Section 5132 of the Public Laws, as amended, to provide a gross weight of 600 lbs. per inch of tire width in lieu of the former 16,000-pound axle limit for vehicles having a gross weight in excess of 20,000 lbs. Provides that the tire width shall be computed in accordance with the manufacturers' designated width and requires sufficient weight to be maintained on the front axle to make the motor vehicle safe in operation.

Effective June 1, 1941.

WASHINGTON—Provides a maximum gross axle weight of 18,000 lbs. Increases to 28,000 lbs. (formerly 24,000 lbs.) the maximum gross weight of two-axle vehicles. Forbids gross weight in excess of 500 lbs. per inch of tire width or in excess of the formula 750 (L plus 40) except where the distance between axles is 18 ft. or less, the formula shall be 650 (L plus 40), but this last formula shall not apply to vehicles now legally operated. Makes unlawful the operation of a vehicle with a wheel base between any two axles of less than 3 ft. 6 in.

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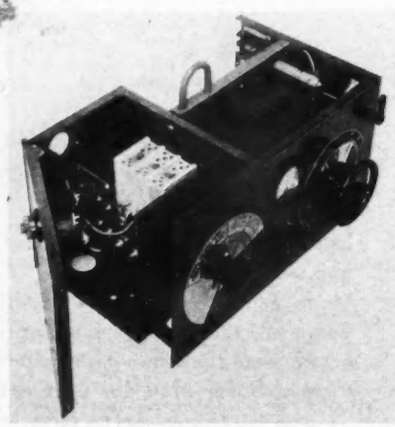

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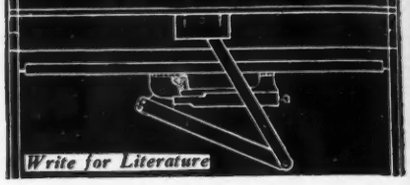

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I.C.C. ASKS CONGRESS TO REGULATE LIMITS

(CONTINUED FROM PAGE 21)

from the Highway Department of the State or States concerned.

3. The holding of public hearings at which all interested parties would be entitled to present testimony.

4. Prescription of size and weight limitation by the Commission.

5. Enforcement to be concurrently conducted by Federal and State agencies.

Following are the conclusions and recommendations of the Commission and its general summary:

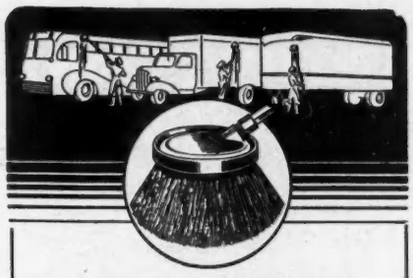
Conclusions and Recommendations

1. We conclude, on the basis of the evidence herein surveyed as to the effects of certain existing State limitations and in the light of the broad public interest in the securing of as economical and efficient a motor transport service as possible, as well as in the light of the requirements of the national defense, that there is need for Federal regulation of the sizes and weight of motor vehicles to the extent hereinafter indicated. While the States of given regions have shown a tendency to bring their regulations into closer accord and while this tendency has been marked in the recent past, the process is a slow one and there is no assurance that it will be carried to the extent the public interest requires. Burdens on interstate commerce cannot be relieved through the judicial processes; only legislation can afford the needed relief.

2. We find that considerations of safety and convenience do not, in and of themselves, require that Congress enter its field of regulation, but we do find that the evidence available justifies the conclusion that, if Federal regulation be undertaken for other reasons, there will be need for consideration of certain phases of sizes and weights in their relation to the safety and conveniences of users of the highways.

3. We find that, if regulation be entered upon, it should be administered in the light of the broad statement of national transportation policy declared in the Transportation Act of 1940.

(TURN TO PAGE 144, PLEASE)



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(CONTINUED FROM PAGE 143)

4. We find that for the most part national uniformity of standards is impracticable and that, on the contrary, Congress should enter this field only to the extent that proves necessary under the circumstances of particular situations. We therefore recommend that provision be made for the entertaining and disposition of complaints against a State or political subdivision thereof attacking its limitations as they apply generally or to a particular location, filed by a responsible party and handled in the manner hereinafter indicated. It is our belief that complaints of this kind will relate to existing restrictions mainly as they apply to the principal roads of a State rather than to its lesser used ones, but there appears to be no need for confining the exercise of Federal power to any given system of roads. Under these conditions, State limitations would continue to apply insofar as they are not superseded.

5. The problems to be faced in the exercise of Federal powers in this regard do not permit of detailed statutory expression of precise standards generally and universally applicable; there obviously is need for administrative determination in the light of the facts of given situations as related to the declared standard of Congress that commerce be not unreasonably burdened. The problems here in issue are an intimate part of the entire problem of transport regulation. On the other hand, they require technical knowledge of roads and experience in the building and maintenance of roads. It therefore is recommended that the authority to fix size and weight standards, as need arises, be vested in this Commission, but that we be authorized to obtain a technical report from the Public Roads Administration, the Federal agency most concerned with road matters, and from the highway department of the State concerned, and

(TURN TO PAGE 145, PLEASE)

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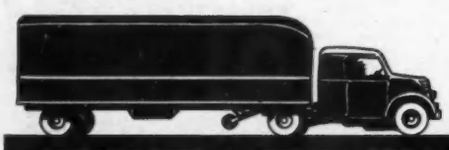

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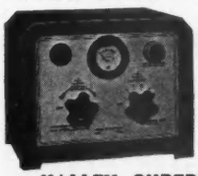

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(CONTINUED FROM PAGE 144)

that we be authorized to give these reports appropriate consideration. Opportunity should also be provided for public hearings.

6. Provision should be made for prompt and orderly modification of any limitation that we may prescribe on recommendations of the Public Roads Administration and the affected State that conditions of an emergency character require temporary modifications in the sizes and weights otherwise allowed.

7. Enforcement of Federal regulation should, to the extent possible, be concurrently conducted by Federal and State agencies.

General Summary

1. That there are wide and inconsistent variations in the limitations imposed by the several States on the sizes and weights of motor vehicles engaged in the transportation of persons and property upon the public highways. The variations are particularly marked in the limitations which relate to length and weight.

2. That the limitations imposed by a single State may and often do have an influence and effect which extend, so far as interstate commerce is concerned, far beyond the borders of that State, nullifying or impairing the effectiveness of more liberal limitations imposed by neighboring States.

3. That with respect to the public highways which serve as the principal arteries of interstate commerce, State limitations may be and to a considerable extent probably are less liberal than is necessary for the proper protection of the highways and their appurtenances and of the public safety.

4. That where such conditions exist, the limitations operate as an obstacle to the flow of interstate traffic, render motor transportation more costly, and result in an impairment of service to the public.

5. That these conditions, therefore, create a need for Federal intervention.

6. That considerations affecting public safety in the use of the highways, unlike considerations affecting the flow of interstate traffic, do not in themselves create a need for Federal intervention, but are factors

(TURN TO PAGE 146, PLEASE)

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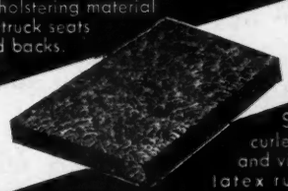

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(CONTINUED FROM PAGE 145)

which should influence the character and extent of any such intervention.

7. That Federal intervention is, in general, desired by the for-hire motor carriers and by the War Department, Department of Agriculture, and the Public Roads Administration of the Federal Government, and to a lesser extent by private motor carriers; that the opinion of the shipping public tends to favor such intervention or to be neutral with respect to it; and that the opposition to such intervention comes, first and foremost, from the railroads and, secondly, from the States.

8. That Federal intervention, within limits, would not be unconstitutional, but that it should be confined within comparatively narrow limits and be resorted to only in particular cases and upon clear proof that an unreasonable obstruction to interstate commerce exists.

The report had the approval of all Commissioners but one. Commissioner Splawn's dissent was succinct:

"I am not convinced that the Congress should undertake to occupy this field because States have enacted laws which may appear on the surface to be restrictive of some interstate operations. Recently in several instances State laws have been modified upon a showing to the legislatures that conditions have changed. From this report I am not convinced that there is need for action by the Congress."

QUIZ ANSWERS

1. a
2. b
3. c
4. c
5. d
6. d
7. a
8. d
9. a
10. c

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